

Chicago Transit Authority

Specification

For

Small Motor Buses

For

The Mobility Limited

CTA-4200-76

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August 1977



CHICAGO TRANSIT AUTHORITY SPECIFICATIONS

NO. G-71524

For

TWENTY (20) SMALL BUSES FOR MOBILITY LIMITED

BID DEPOSIT - THIRTY THOUSAND DOLLARS (\$30,000)

FUNDING PROVIDED BY:

Urban Mass Transportation Department
Illinois Department of Transportation
Northeastern Illinois Regional Transportation Authority

PREPARED BY:

General Operations Division
Harold H. Geissenheimer
General Operations Manager

And

Thomas L. Wolgemuth
Manager, Engineering

ISSUED BY:

Materials Management Department
Larry Pianto
Manager, Materials Management

BID PROPOSALS TO BE EXECUTED IN TRIPLICATE

ALL SIGNATURES TO BE NOTARIZED BEFORE A NOTARY PUBLIC

James J. McDonough
Chairman

George Krambles
General Manager

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INSTRUCTIONS TO BIDDERS

FOR

SMALL BUSES FOR MOBILITY LIMITED CONTRACT

Proposals will be received by the CHICAGO TRANSIT AUTHORITY, a Municipal Corporation, in accordance with the Contract Documents set forth herein.

1. DESCRIPTION OF WORK:

The work under these Contract Documents consists of the purchase of 20 small buses.

2. USE OF ENGLISH LANGUAGE:

All Contract Documents, conferences, letters, technical information and drawings shall be conducted or offered solely in the English Language.

3. COMPLIANCE WITH LAWS:

The Bidders shall at all times observe and comply with all laws, ordinances, regulations and codes of the Federal, State, City and other local government agencies, which may in any manner affect the preparation of proposals or the performance of the contract.

4. INELIGIBLE BIDDERS:

Bidders or Suppliers whose names appear on the U.S. Comptroller General's List of Ineligible Contractors are not eligible for award of, or participation in, any contract that may be awarded as a result of this Invitation.

Execution of a proposal by any Bidder constitutes certification that he or any subcontractor or suppliers to him on this proposed contract, if one is awarded, are not on the Comptroller General's List of Ineligible Contractors.

A subsequent determination by the Authority that a Bidder knowingly made any misstatement of facts in this regard will be cause for immediate disqualification, suspension or termination of the contract for cause.

The Comptroller General's List of Ineligible Contractors is available from the G.A.O. Publications Branch, Room 6427, 441 G. Street, Washington, D.C. 20548.

5. BID DEPOSIT:

A proposal shall be accompanied by cash, cashier's check, certified check or money order in the amount shown in the advertisement.

All certified or cashier's checks shall be drawn on a responsible bank, doing business in the United States, and shall be made payable to the order of the Chicago Transit Authority.

6. PREPARATION OF PROPOSAL:

The Bidder shall prepare his proposal in TRIPLICATE on the attached proposal forms. Unless otherwise stated, all blank spaces on the proposal page or pages, applicable to the subject specification, must be correctly filled in. Either a unit price or a lump sum price, as the case may be, must be stated in United States Dollars for each and every item, either typed in or written in ink, in figures, and if required, in words.

If a Bidder is a Corporation, the President or Vice-President and Secretary or Assistant Secretary, shall execute three copies of the bid. The Corporation shall affix its seal to all three copies. In the event that this bid is executed by someone other than the President or Vice-President, a certified copy of that section of the Corporate By-Laws or resolution of the Corporation which permits the person to execute the offer for the Corporation shall be furnished.

If Bidder is a Partnership or Joint-Venturer, all partners or joint-venturers shall execute three copies of the bids, unless one partner or joint-venturer has been authorized to sign for the partnership or joint-venturer, in which case, evidence of such authority satisfactory to the Contract Officer shall be submitted.

If Bidder is a Sole Proprietor, he shall execute three copies of the bid.

A "Partnership", "Joint-Venturer" or "Sole Proprietor" operating under an Assumed Name must be registered with the Illinois County in which located, as provided in Chapter 96, Section 4 et seq., Illinois Revised Statutes, as amended.

ALL SIGNATURES SHALL BE SWORN TO BEFORE A NOTARY PUBLIC

7. TAXES:

Federal Excise Tax does not apply to materials purchased by the Chicago Transit Authority by virtue of Exemption Certificate No. 36-73-0234K. Illinois Retailers' Occupation Tax, Use Tax and Municipal Retailers' Occupation Tax do not apply to materials or services purchased by the Authority by virtue of Statute. These taxes shall not be included in any of the prices quoted herein. The prices quoted herein shall agree with all Federal Laws and Regulations.

8. PRICES MUST BE COMPLETE:

Prices quoted for the buses which the Bidder proposes to furnish, shall include any and all costs of manufacture, delivery, applicable taxes for the furnishing of duties or permits, if any, for complete items of Material or Equipment, ready for use or operation, and shall include any costs of transportation to the destination, including export or import duties, insurance, spare parts or accessories required by the Specifications, and warranty service, whether or not it is the Bidder's practice to quote on some other basis. The total price quoted for any work shall be deemed by the Authority to include these costs and NO EXTRAS will be allowed on that account. Bids which purport to exclude these costs shall be rejected as unresponsive.

9. SUBMISSION PROPOSALS:

All prospective Bidders shall submit sealed proposals in TRIPLICATE in envelopes provided for that purpose to the CHICAGO TRANSIT AUTHORITY, P.O. Box 3555, Chicago, Illinois 60654, Office of the Secretary of the Board, Merchandise Mart Plaza; or, if proposals are submitted in envelopes other than those so provided for this purpose, then the sealed envelope submitted by the prospective Bidder shall carry the following information on the face of the envelope: Bidder's name, address, subject matter of proposal, advertised date of bid opening and the hour designated for the bid opening as shown on the advertisement.

Where proposals are sent by mail to the Secretary, the Bidders shall be responsible for their delivery to the Secretary before the advertised date and hour for the opening of the bids. If the mail is delayed beyond the date and hour set for the bid opening, proposals thus delayed will not be considered and will be returned unopened.

10. WITHDRAWAL OF PROPOSALS:

Bidders may withdraw their proposals at any time prior to the date and hour specified in the advertisement for the receipt of bids. However, no Bidder shall withdraw or cancel his proposal for a period of ninety (90) Calendar Days after said advertised date and hour for the receipt of proposals.

11. RESPONSIBILITY OF BIDDER:

The Authority reserves the right to refuse to accept any proposal from any person, firm or corporation that is in arrears or is in default to the Chicago Transit Authority upon any debt or contract, or that is a defaulter, as surety or otherwise, upon any obligations to the Authority, or had failed to perform faithfully any previous contract with the Authority.

A Bidder must be either manufacturer of the Small Buses bid on or the authorized agent of such manufacturer. A bid will be acceptable only if the small buses are manufactured by a person, firm or corporation which:

Has adequate experience in the manufacture of Small Buses of the type bid on.

Has in operation a manufacturing plant adequate to assure delivery of all Small Buses within the time specified under the contract.

Has adequate engineering and service personnel available, within 48 hours, to satisfy any engineering or service problems during the testing of prototype equipment and warranty period.

Has necessary facility and financial resources to complete the contract in a satisfactory manner, within the required time.

Will provide an annual recommended spare parts list, for a 6 year period, based on operation of an average 30,000 bus miles per year and will maintain said recommended parts supply for the 6 year interval.

Upon request, supporting data covering the above qualifications must be submitted to the Contract Officer.

12. CONSIDERATION OF PROPOSALS:

The Authority reserves the right to reject any or all proposals or any part thereof. The Authority further reserves the right to excuse informalities in the bids and bidding when, in the judgment of the Authority, the best interests of the Authority will be served and the spirit of competition will be maintained.

13. ACCEPTANCE OF PROPOSALS:

The Authority will accept in writing one of the proposals or reject all proposals, within ninety (90) calendar days from the date of opening of bids, unless the lowest responsible Bidder, upon request of the Contract Officer, extends the time of acceptance.

The Contract shall not be in force and effect until the Chairman of the Board of the Chicago Transit Authority, or his designee, has affixed his signature to the Contract Documents.

14. PERFORMANCE-PAYMENT BOND(S) AND INSURANCE:

When required by the Contract Documents, the successful Bidder or Bidders shall, within ten (10) calendar days after acceptance of the Bidder's proposal by the Authority, furnish a performance-payment bond in the full amount of the Contract on an approved American Institute of Architects (A.I.A.) bond form and/or furnish and keep in force, during the life of the Contract, any and all insurance in amounts as required in Section 30 of General Specification, with insurance companies acceptable to the Chicago Transit Authority. Any insurance company with less than a (B+) policy holder rating by Alfred M. Best Company will not be acceptable to the Chicago Transit Authority.

15. FAILURE TO FURNISH BOND(S) OR INSURANCE:

In the event that the Bidder fails to furnish the performance-payment bond and/or insurance requirements, in said period of ten (10) calendar days after acceptance of the Bidder's(s') proposal, then the bid deposit of the Bidder(s) may be retained by the Authority as liquidated damages and not as a penalty, IT BEING NOW AGREED, that said sum shall be paid as liquidated damages, not as a penalty, to partially cover costs and losses by the Authority.

16. INTERPRETATION OF CONTRACT DOCUMENTS AND PRE-BID PROCEDURE:

It is the intent of this section, that the following matters, and all other major engineering considerations, be settled to the Authority's and Bidder's satisfaction before submission of bids, so that the Authority may determine exactly what Bidder is offering. Failure of a prospective Bidder to comply with these "Pre-Bid Meeting" requirements may be cause for rejection of bids received. After award of Contract, the Authority recognizes no obligations to consider Contractor proposals which should have been present at "Pre-Bid".

During the period between Invitation to Bid and the time fixed for submission of bids, prospective Bidders shall request, and the Authority shall convene, meetings with prospective Bidders. The purpose of these meetings shall be:

16. INTERPRETATION OF CONTRACT DOCUMENTS AND PRE-BID PROCEDURE - Continued

- A. Question regarding or requests for clarification of Contract Documents.
- B. Consideration of Bidder requests for variation of Contract Documents.
- C. Consideration of items which the Bidders propose to offer as an "equal" to those specified in the Contract Documents.

The Bidder shall submit documentation to substantiate that the Bidder proposes to furnish something equal to that specified in the Contract Documents. In addition to descriptive literature, test data, and evidence of successful similar applications, this documentation shall include the Bidder's comprehensive comparative evaluation of that specified and that proposed and, upon request by the Engineer, samples of that specified and that proposed. The Engineer may require, and the Bidder shall provide, additional documentation requested by the Engineer to satisfy him that Bidder's assertions are factual.

- D. Consideration of items, procedures and systems that the Bidder proposes to furnish and utilize in the performance of the work required by the Contract Documents, wherein review by the Authority is required.
- E. Authority evaluation of Subcontractors proposed by the prospective Bidders. Prospective Bidders shall submit documentation stating the qualifications of Subcontractors proposed by the Bidder to perform work under the Contract Documents.
- F. Consideration of any other Contract matter which the prospective Bidder desires considered prior to bidding.

"Pre-Bid Meetings" shall be requested by Bidder so as to allow the Authority to commence the Meetings sixty (60) calendar days in advance of the scheduled bid opening date. All subjects which the Bidder wishes to be considered shall be submitted in writing no later than seven (7) calendar days prior to schedule Meeting Date. Notes of "Pre-Bid Meetings" will be prepared by the Authority and distributed to those on record as having purchased a copy of the bid solicitation documents. Authority replies to all subjects presented at "Pre-Bid Meetings" will be included in the notes.

A Bidder's Appeal of any decision made at the "Pre-Bid Meeting" must be in writing, addressed to the attention of the General Manager of the Authority, and received not less than seven (7) calendar days before bid opening. Any Appeal received less than seven (7) calendar days before bid opening will not be considered. When deciding Appeals, the General Manager of the Authority will consider the documentation presented by Bidder during previous meetings between the Engineer and/or Contract Officer and the Bidder, and the additional information obtained through specific request to the Engineer, Contract Officer, Bidder or other Third Party.

An Appeal may be withdrawn at any time before the General Manager issues a final decision. Once the final decision is issued, no further review by CTA will be available.

16. INTERPRETATION OF CONTRACT DOCUMENTS AND PRE-BID PROCEDURE - Continued

If the date of bid opening is postponed, the Contract Officer will notify those who are on record as having purchased a copy of the bid solicitation documents that an Appeal has been filed and that the date of bid opening is postponed until the General Manager has issued his final decision. Appropriate addenda will be issued postponing and rescheduling the date of bid opening.

17. CATALOGS:

Each Bidder shall submit, where necessary, or when requested by the Contract Officer or Engineer, catalogs, descriptive literature, and detailed drawings, fully detailing features, designs, construction, appointments, finishes and the like not covered in the specifications, necessary to fully describe the material or work he proposes to furnish.

18. TRADE NAMES:

In cases where an item is identified by a manufacturer's name, trade name, catalog number, or reference, it is understood that the Bidder proposes to furnish the item so identified and does not propose to furnish an "equal" unless the proposed "equal" is definitely indicated therein by the Bidder.

The specific article, equipment or material mentioned shall be understood as establishing the type, function and minimum standard of design, efficiency, quality and performance desired, and shall not be construed in such a manner as to exclude manufacturer's products of comparable design, efficiency, quality and performance. Bids on other makes and catalogs will be considered, provided each Bidder clearly states at the "Pre-Bid Meeting" what he proposes to furnish.

The Engineer hereby reserves the right to accept as an "equal", or to reject as not being an "equal", any article the Bidder proposes to furnish which contains major or minor variations from the specification requirements but which may comply substantially therewith.

19. RETURN OF BID DEPOSIT:

The bid deposit of all, except apparent low Bidder on each Contract, will be returned within ten (10) calendar days after the opening of bids. The bid deposit of the accepted Bidder will be returned after the proposal has been accepted by the Authority and the acceptance by the Authority of satisfactory performance bond and/or payment bond and/or insurance where such bond(s) or insurance are required.

20. ORDER OF PRECEDENCE OF COMPONENT PARTS OF THE CONTRACT DOCUMENTS:

The Contract Documents for this Contract consist of the following component parts, listed in their order of precedence, with the item of greatest precedence listed first:

1st) General Specification

2nd) Detail Specification Including Drawings

20. ORDER OF PRECEDENCE OF COMPONENT PARTS OF THE CONTRACT DOCUMENTS - Continued

3rd) Proposal and Non-Collusion Affidavit

4th) Instructions to Bidders

5th) Advertisement for Bids

Any Addenda and Contract Change Orders, Pre-Bid Meeting Notes, Letters and Engineering Conference Notes which may be issued shall be a part of these Contract Documents and shall take precedence over any other part of the Contract Documents wherever they conflict therewith.

21. NOTICES:

All communications and notices provided herein shall be in writing, delivered personally or by certified or registered mail, to the name and address of the accepted Bidder as provided in the signature page of the proposed hereof, and to the Chicago Transit Authority, Attention: Manager, Materials Management or Engineer as appropriate, Merchandise Mart Plaza, P.O. Box 3555, Chicago, Illinois 60654.

22. ADDENDA:

Addenda shall not be issued later than seventeen (17) calendar days prior to bid opening. Addenda issued within seventeen (17) calendar days of the bid opening will contain a provision postponing the date of bid opening to a date which will allow Bidders adequate time to respond to the addenda.

GENERAL SPECIFICATIONS

SECTION 1 - SCOPE AND PURPOSE

- A. These Contract Documents are intended to establish and control both specific and general design criteria for an air conditioned motor bus, rated at 23 passenger, 25 feet long, 96 inches wide. The bus shall be propelled by a diesel or a gasoline engine, with an automatic hydraulic torque converter.
- B. These Contract Documents are intended to cover all labor, tools, materials, parts, apparatus and equipment (except as otherwise specifically noted herein or stated in writing by the Authority) required for the construction and assembly of the number of buses indicated in the Contract Documents completely tested and ready for operation when accepted by the Authority.
- C. The Builder shall provide a motor bus with an engine, engine appurtenances, automatic transmission and controls, and differential ratio, which are compatible and will provide a rate of acceleration and speed with all auxiliary equipment in operation and 5,000 pound load, which is not less than the last "New Look" air conditioned diesel buses, furnished to Chicago Transit Authority. The buses shall be capable of and governed at a top speed of 50-55 miles per hour, on the level, at the Builder's recommended governed engine RPM.
- D. The propulsion engine shall be accessible for inspection and repairs through compartment doors on the interior and front of the buses.

The rear axle shall have dual wheels. Overall appearance of the body shall present a pleasing symmetrical contour and shall require approval of the Engineer.
- E. A single stream front door shall be located rearward of the right front wheelhousing.
- F. The bus body and equipment supplied shall be of the best engineered design for urban mass transit. The Builder shall use his best judgment and experience in determining the stresses imposed by the type of operation described and in the structure and equipment he supplies, he shall provide for those stresses with an adequate margin of safety. The Builder shall be guided by the desire to obtain the maximum strength and reliability with the minimum weight which is obtainable at reasonable cost, in the selection of the type of material to be used.
- G. The exterior noise from the bus shall not exceed the limit prescribed as per Municipal Code of Chicago - Chapter 17, Article IV, Section 17, 4.7 (b), being in effect from January 1975, using the procedures set forth in the SAE Standard SAEJ366b.
- H. The interior noise at any location one (1) foot from the interior windows and walls and four (4) feet from the floor shall not exceed 83dbA with bus standing, with transmission in neutral and engine at maximum governed RPM, with all accessories in operation including optimum air conditioning and heat.

SECTION 2 - DEFINITION OF TERMS AS USED IN THIS SPECIFICATION

Wherever in the Contract Documents the following terms, or pronouns in place of them, or abbreviations are used, the intent and meaning shall be interpreted as follows:

- A. "Chicago Transit Authority", "Transit Authority", "Authority", "CTA" means Chicago Transit Authority, a Municipal Corporation created by the Metropolitan Transit Act, approved April 12, 1945.
- B. "Chicago Transit Board" or "Board" means the governing and administrative body of Chicago Transit Authority.
- C. "Chairman" means the Chairman of the Chicago Transit Board, or his successor or successors upon whom his duties may devolve.
- D. "General Manager" means the General Manager of the Chicago Transit Authority.
- E. "Secretary" means the Secretary to Chicago Transit Board.
- F. "UMTA" means Urban Mass Transportation Administration, an Agency of the Department of Transportation of the United States Government.
- G. "IDOT" means Illinois Department of Transportation.
- H. "Contract Officer" means Manager, Materials Management or any other person designated by him to act in his behalf.
- I. "Contractor", "Bus Builder" or "Builder" means the builder and assembler of the complete bus. Prior to award of contract, the "Contractor" shall be known as "Bidder".
- J. "Engineer" means Manager, Engineering or any other person designated by him to be the Engineer in charge of all or any part of the work.
- K. "Engineering Conference Notes" means the written record prepared by the Engineer of meetings held with the Contractor or his agents.
- L. "Inspector" means the representative(s) of the CTA assigned to the inspection of materials and workmanship under the Contract Documents.
- M. "Manufacturer" means the original manufacturer supplying material, equipment or apparatus for installation on the bus.
- N. "Pre-Bid Meeting Notes" means the written record prepared by the Authority of meetings held with Bidders before bid opening and issued by the Contract Officer.
- O. "Work" means the furnishing of all labor, materials and equipment necessary for the successful completion of the Contract and the carrying out of all duties and obligations imposed by the Contract in accordance with the Contract Documents.

SECTION 3 - GENERAL OBLIGATIONS OF THE CONTRACTOR

- A. The Contractor shall design and build the bus and each item of equipment or apparatus, strictly in accordance with the requirements of the Contract Documents.
- B. The Contractor shall furnish all labor and materials, plant, power, tools equipment, and transportation required for the performance and completion of the work in the manner and within the time herein specified. It is understood and agreed that the Contractor shall do all the work necessary to design the bus and prepare the required detail drawings of the various parts. The Contractor shall assume responsibility for the proper working and fitting together of all parts and specialties, with necessary clearance for successful operation in accordance with the Contract Document.
- C. The Contractor shall perform at no additional expense all of the items set forth as its responsibility under this Contract and pay all fees, permits and royalties, for patented appliances, products or processes incorporated in the work.
- D. The Contractor shall furnish a production schedule for the work, the form and substance of which shall have sufficient detail for designating major mileposts of engineering, materials procurement, manufacturing and testing. This schedule shall be kept current throughout the performance of the work.
- E. The Contractor shall state in his proposal such data which the Contractor will guarantee, pertaining to the performance ability of the buses and accessories, as required in Section 24.09, Page 24-5, "Information to be Furnished with Bid Proposal".
- E. The Contractor shall submit drawings and schedules of equipment, material and specialties for Engineer's consideration. Such drawings shall be those necessary to convey design concept, operation, overall assembly aspects, maintenance accessibility, and interfaces. Ordering or manufacturing of any parts prior to specified Engineer's review (see SECTION 13) of these drawings will be entirely at the Contractor's risk. Detail parts drawings for manufacturing purposes need not be furnished except on request, but shall be available and accessible to the Engineer at all times. It is understood that such review by the Engineer does not in any way relieve the Contractor of responsibility for the adequacy of the design, and fitting of the various parts in accordance with the Contract Documents.
- F. It shall be specifically understood that the omission of any drawing or schedule, or reference thereto, or of any part or item from any drawing or schedule, or from these Contract Documents, which is required to make the equipment or apparatus furnished by a subcontractor or the Contractor fully complete and suitable for successful performance of the specified functions in accordance with the requirements of the Contract Documents shall not relieve said subcontractor or the Contractor from furnishing the required items or parts under the Contract Documents.

SECTION 3 - GENERAL OBLIGATIONS OF THE CONTRACTOR (Continued)

- G. The Contractor shall advise the Engineer of the latest applicable revision of any drawing, chart, listing, model, part, style or similar identification referenced in the technical specification. The Engineer will decide whether the revision may apply to this Contract.

SECTION 4 - GOVERNING LAW

This Contract and the settlement of any disputes arising under it shall be governed by the law of the State of Illinois and the United States of America.

SECTION 5 - UNLAWFUL PROVISIONS EXCLUDED

If any clause, sentence, paragraph or section within this Specification is held to be invalid or unenforceable for any reason, it shall not affect, impair, invalidate or nullify the remainder of this Specification, but the effect thereof shall be confined to the clause sentence, paragraph or section of this Specification so adjudged to be invalid or unenforceable

SECTION 6 - INDEMNIFICATION

The Contractor shall indemnify, keep and save harmless the Authority, its agents, officials and employees, against all injuries, deaths, loss damages, claims, patent claims, suits, judgments, costs and expenses, which may in anywise accrue against the Authority in consequence of the granting of this Contract or which may in anywise result therefrom, whether or not it shall be alleged or determined that the act was caused through negligent act or omissions of the Contractor or his employees, of the Subcontractor or his employees, if any, or of the Authority or its employees; and the Contractor shall, at its own expense, appear, defend and pay all charges of attorneys and all costs and other expenses arising therefrom or incurred in connection therewith; and, if any judgments shall be rendered against the Authority in any such action, the Contractor shall at his own expense, satisfy and discharge the same. In the event of any conflict between the provisions of any insurance policy and the above agreement, the above agreement shall govern.

SECTION 7 - PATENTED DEVICES, MATERIALS AND PROCESSES

- A. It is agreed that the Contractor shall protect and indemnify the Authority, Chicago Transit Board, General Manager, Contract Officer, Engineer, its Officers and all employees thereof against all loss or expense of any nature whatsoever; shall bear all costs of any and all suits which may arise; and shall pay any and all damages which may be awarded against them in consequence of the use under this Specification of any patented device, process, apparatus, design, substance, material, method, object or invention, whatsoever.

SECTION 7 - PATENTED DEVICES, MATERIALS AND PROCESSES (Continued)

- B. The Contractor further agrees that he will promptly assume the defense of any and all claims or actions which might be threatened or instituted against the Authority, Chicago Transit Board, General Manager, Contract Officer, Engineer, its Officers or any of the employees thereof as soon as he is notified of such claim or action.
- C. It is agreed that the Contractor shall indemnify, save and hold harmless, the Authority, and its agents, officials and employees, against all liabilities, judgments, loss, costs, damages and expenses which may in anywise come against the Authority or its agents, officials and employees, respectively, by reason of the use or any claim of the use of any patented material, design, machinery, device, equipment or process furnished by the Contractor and accepted by the Authority.

SECTION 8 - GOVERNMENTAL REQUIREMENTS FOR MATERIAL AND EQUIPMENT PURCHASES

This Contract is subject to financial assistance contracts between the Authority, the U. S. Department of Transportation, Illinois Department of Transportation, and the Local Funding Agencies.

The following clauses shall be included as part of the Specification for the proposed Contract and for each of its related Subcontracts:

- A. Contract Changes - Any proposed change in this Contract shall be submitted to the appropriate Public Body for its prior approval.
- B. Interest of Members of Congress - No member of or delegate to, the Illinois General Assembly or Congress of the United States shall be admitted to any share or part of this Contract or to any benefit arising therefrom.
- C. Interest of Public Officials - No member, officer or employee of the Authority or of a local public body during his tenure or for one (1) year thereafter shall have any interest, direct or indirect, in this Contract or the proceeds thereof.
- D. Equal Employment Opportunity - In connection with the execution of this Contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, religion, color, sex or national origin. The Contractor shall take affirmative actions to ensure that applicants are employed and that employees are treated during their employment, without regard to their race, religion, color, sex or national origin. Such actions shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

SECTION 8 - GOVERNMENTAL REQUIREMENTS FOR MATERIAL AND EQUIPMENT PURCHASES
(Continued)

- E. Air Pollution - All facilities and equipment acquired, constructed, reconstructed or improved using UMTA and IDOT grant funds, shall be designed and equipped to prevent or control air pollution in accordance with criteria issued by the Department of Health, Education and Welfare. However, in those locations where State or Local air pollution regulations are in force, the more restrictive criteria shall govern. All Contractors and suppliers must submit evidence to Authority that the governing air pollution criteria will be met. This evidence and related documents will be retained by the Authority for on site examination by UMTA and IDOT representatives.
- F. Minority Business Enterprise - In connection with the performance of this Contract, the Contractor will cooperate with the Authority in meeting its commitments and goals with regard to the maximum utilization of minority business enterprises and will use its best efforts to ensure that minority business enterprises shall have the maximum practicable opportunity to compete for subcontract work under this Contract.
- G. Termination of Convenience - Authority reserves the right to terminate this Contract at any time after the date of Contract, with or without cause, by giving the Contractor, in writing, a notice of termination. The notice shall be mailed certified to the Contractor at his business address, and the effective date of termination shall be the date of receipt.

The Contractor shall be paid his costs, including contract close-out costs, and profit on work performed up to the time of termination. The Contractor shall promptly submit, but no later than one (1) year from date of notification, his termination claim to the Authority and the parties shall negotiate a termination settlement to be paid the Contractor. If the Contractor has any property in his possession belonging to the Authority, the Contractor will account for the same, and dispose of it in the manner of the Authority directs.

SECTION 9 - FEDERAL, STATE AND LOCAL REGULATIONS

- A. Buses manufactured and delivered by Contractor shall comply with all applicable Federal, State and Local laws, standards and regulations, in effect on the date of the bid opening and scheduled to go into effect on the date of the bid opening or scheduled to go into effect prior to the final completion date specified by Contractor in his Proposal. Any Federal, State and Local law, standard and regulation existing on the date of bid opening but scheduled to be effective during the manufacture and delivery of the buses, shall be applicable to the entire number of buses to be furnished by Contractor.
- B. If any part of this Specification shall be, at the date of issue or during performance of the Contract, in nonconformity with Federal, State or Local laws or regulations because of materials or requirements specified therein or herein, Authority shall have the right to require additional or substitute materials and/or requirements.

SECTION 9 - FEDERAL, STATE AND LOCAL REGULATIONS (Continued)

- C. Any change in the work to be performed under this Specification which is necessitated by a law, standard or regulations enacted after the date of bid opening shall constitute a contract change in accordance with SECTION 21, CHANGES.

SECTION 10 - ACCESS TO WORK AND RECORDS

- A. The Engineer and his inspectors shall have access, at any reasonable time, to the premises used by the Contractor or to any plant or place where materials, work or any part thereof, are being made, performed, or stored.
- B. The Contract Officer, authorized representative of the U. S. Department of Transportation, the Comptroller General of the United States and authorized representatives of the Illinois Department of Transportation, shall have access at any reasonable time, to inspect the records and documents of the Contractor and its suppliers, relating to any labor, materials, plant and equipment used in the performance of the Contract.
- C. Access shall be given or obtained both before and after completion of this Contract for the duration of the guarantee period.

SECTION 11 - INSURANCE REQUIREMENTS

The Contractor, and any Subcontractor of the Contractor, shall take out and maintain during the life of this Contract, the following insurance as specified by the insertion of policy limits. The Owners Protective Liability Insurance (if indicated) can be substituted by naming the Authority as an additional assured under the Comprehensive General Liability Insurance with provisions acceptable to the Authority.

1. Workman's Compensation

Coverage A - Statutory
Coverage B - \$ Nil

2. Comprehensive General Liability

Bodily Injury Liability:	Each Person	\$ <u>200,000</u>
	Each Accident	\$ <u>500,000</u>
Property Damage Liability:	Each Accident	\$ <u>100,000</u>

3. Automobile Liability

Bodily Injury Liability:	Each Person	\$ <u>200,000</u>
	Each Accident	\$ <u>500,000</u>
Property Damage Liability:	Each Accident	\$ <u>100,000</u>

SECTION 11 - INSURANCE REQUIREMENTS (Continued)

4. Owners Protective Liability: (With CTA Named Insured)

Bodily Injury Liability:	Each Person	\$ 200,000
	Each Accident	\$ 500,000
Property Damage Liability:	Each Accident	\$ 100,000

5. Contractual Liability

\$ _____

The Contractor shall not commence work herein until he has obtained the required insurance and has received written approval of such insurance by the Authority. He shall furnish a certified copy of the policy or policies to the Authority. The policy or policies shall provide in the event the insurance should be changed or canceled, such change or cancellation shall not be effective until ten (10) days after the Authority has received notice of such change or cancellation from the insurance company. Such notice shall be mailed to the Authority care of the Contract Officer, Room 732, P.O. Box 3555, Chicago, Illinois 60654. An insurance company having less than B+ POLICY HOLDERS RATING BY the Alfred M. Best and Company, Incorporated will not be considered as acceptable.

SECTION 12 - ASSIGNING OR SUBCONTRACTING

- A. The Contractor shall give its personal attention to the fulfillment of the Contract and shall keep the work under its control.
- B. Except as agreed in the Pre-bid Procedure, the Contractor shall not sublet, sell, transfer, assign or otherwise dispose of the Contract or any portion of payments due thereof, or of its right, title or interest therein, without written consent of the Contract Officer. No Subcontracts, or transfer of this Contract, shall in any case release the Contractor of its liability under the Contract and bonds.
- C. Any consent to sublet any part of the work shall not be construed to be an approval of the said Subcontract or of any of its terms, but shall operate only as an approval of the making of a Subcontract between the Contractor and Subcontractor.
- D. All work performed for the Contractor by a Subcontractor shall be pursuant to an appropriate agreement between the Contractor and the Subcontractor (and where appropriate between Subcontractors and Sub-subcontractors) which shall contain provisions that:
 - 1. Preserve, protect and guarantee the rights of the Authority under the Contract with respect to the work to be performed under the subcontract so that the Subcontractor, thereof, will not prejudice such rights.
 - 2. Require that such work be performed in accordance with the requirements of these Contract Documents.

SECTION 12 - ASSIGNING OR SUBCONTRACTING (Continued)

3. Require that all claims for extensions of time, damages for delays or otherwise with respect to subcontracted portions of the work shall be submitted to the Contractor (via any Sub-contractor or Sub-subcontractor where appropriate) in the manner provided in these Contract Documents for like claims by the Contractor upon the Authority.
 4. Obligate each Subcontractor specifically to consent to the provisions of this Paragraph in writing.
 5. The Contractor shall be responsible to the Authority for any failure of a Subcontractor (and where appropriate a Sub-subcontractor) to comply with the provisions of these Contract Documents.
- E. A Subcontractor will be recognized only in the capacity of an employee or agent of the Contractor.
- F. The Contractor shall direct the attention of its Subcontractors to the requirements of all federal, state and municipal laws, ordinances, rules and regulations as they apply.

SECTION 13 - REVIEW OF CONTRACTOR'S DRAWINGS AND DATA

- A. Contractor shall submit for the Engineer's review all drawings and data required by the Contract Documents and such other drawings and data as may be requested by the Engineer which will enable the Engineer to determine to a high degree of engineering confidence that the Contractor will deliver buses conforming to the Contract Documents suitable for the Authority operations, maintenance and safety practices, and operation in the Authority's operating environment. The Authority agrees that, to the best of its ability, non-complying and unsuitable features proposed by the Contractor will be identified at the design stage of bus development.
- B. Drawings and data submitted by the Contractor for review by the Engineer which contain variation from the requirements of the Contract Documents shall be accompanied by an explanation detailing the justification for variation. Drawings and data by themselves will not be recognized by Engineer as valid instruments for request and acceptance of variations from the requirements of the Contract Documents. Any drawings and data submitted by the Contractor without any explanation for a proposed variation, shall not be used by the Contractor to implement the proposed variation.
- C. The Engineer shall return drawings and data to the Contractor within fifteen (15) calendar days after acknowledged receipt, with one of the following notations:
- (1) No comment
 - (2) See comments
 - (3) Request for additional information

SECTION 13 - REVIEW OF CONTRACTOR'S DRAWINGS AND DATA (Continued)

In the event the drawing is returned with "no comment", the Contractor may proceed with the work on the basis of such drawing.

In the event the drawing is returned with the notation "see comments", or "request for additional information", the Contractor shall have fifteen (15) calendar days to make the required changes or modifications or to supply the required additional information and return the drawing for review.

All technical data, test schedules, test results, progress schedules and reports, drawing lists, samples and other data submitted by the Contractor and requiring review by the Engineer will be handled in accordance with the above provisions.

Review of the Contractor's drawings hereunder shall not relieve the Contractor of any responsibility, including, but not limited to, responsibility for accuracy of dimensions and details. The Contractor shall remain responsible for agreement and conformity of its drawings and data with the Contract Documents, and for conformity of the completed buses and all components thereof with the Contract Documents.

SECTION 14 - LOCAL REPRESENTATION

- A. The Contractor shall have competent technical personnel available to assist in any problem which the Authority might have on the buses at no additional cost to the Authority. Such personnel shall be available to perform corrective and warranty work within forty-eight (48) hours after being requested by the Authority.
- B. Such personnel shall be made available during the period of the performance of the Contract and during the guarantee period for those items still covered by the Contractor's guarantee.
- C. These technical personnel shall remain on the Authority's property until all problems are solved to the Authority's satisfaction.

SECTION 15 - SUSPENSION OF WORK AND DELAY BY AUTHORITY

- A. The Contract Officer may order the Contractor in writing to suspend, delay or interrupt all or any part of the work for such period of time as he may determine to be appropriate for the convenience of the Authority.
- B. If the performance of all or any part of the work is for an unreasonable period of time, suspended, delayed or interrupted by an act of the Authority in the administration of this Contract, or by its failure to act within the time specified in this Contract (or if no time is specified, within a reasonable time), an adjustment shall be made for any increase in the cost of performance of this Contract (excluding profit) and/or for any delay necessarily caused by such unreasonable

SECTION 15 - SUSPENSION OF WORK AND DELAY BY AUTHORITY (Continued)

- B. (Continued)
suspension, delay or interruption and the Contract modified in writing accordingly. However, no adjustment shall be made under this clause for any suspension, delay or interruption to the extent (1) that performance would have been so suspended, delayed or interrupted by any other cause, including the fault or negligence of the Contractor or (2) for which an equitable adjustment is provided for or excluded under any other provision of this Contract.
- C. No claim under this clause shall be allowed (1) for any costs incurred more than twenty (20) days before the Contractor shall have notified the Contract Officer in writing of the act or failure to act involved (but this requirement shall not apply as to a claim resulting from a suspension order), and (2) unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of such suspension, delay or interruption, but not later than the date of final payment under the Contract.

SECTION 16 - GUARANTEE

- A. The Contractor shall warrant and guarantee each vehicle to be free from any defects in design, material and workmanship, including all specialties and accessories used in the construction and assembly of the motor bus and the proper adequate installation and connecting-up of all equipment apparatus.
- B. The Contractor shall warrant and guarantee each motor bus, including all units and equipment, for a period of twelve (12) months or 24,000 miles, whichever shall occur first, from the date of acceptance of said motor bus by Chicago Transit Authority. The Contractor shall warrant and guarantee the air conditioning system for two (2) years regardless of mileage.

In addition, if the bus is equipped with a diesel engine, the Contractor shall warrant and guarantee the diesel engine for a period of twenty-four (24) months or one-hundred thousand (100,000) miles, whichever shall occur first. Within twenty-four (24) months and less than fifty-thousand (50,000) miles, reimbursement will be made by the Builder for one-hundred percent (100%) labor and material; and within twenty-four (24) months and between fiftythousand (50,000) and one-hundred thousand (100,000) miles, reimbursement will be made by the Builder for one hundred percent (100%) material and fifty percent (50%) labor.

- C. If any unit or sub-unit on the bus shall have a failure rate twenty-five percent (25%) or greater during any twelve (12) month period of the original guarantee period, that unit or units or sub-unit or sub-units shall be considered to have failed one-hundred percent (100%), and the Builder shall remove all the units and replace them with new or modified units at no cost to Chicago Transit Authority. The guarantee period for that unit shall then start from the date of installation of the new or modified unit.

SECTION 16 - GUARANTEES (Continued)

- D. Contractor's warranty and guarantee is subject to the condition that the Authority has substantially complied with the reasonable requirements of any maintenance manual furnished by the Contractor covering the item in respect of which the claim is made. Should a part, component or item that is considered a consumable item fail at the end of its normal service life, and such failure shall occur prior to the expiration of the guarantee periods above, such component or item shall be deemed to be outside the coverage of the guarantee.
- E. During the respective periods of the guarantee, the Engineer will promptly notify the Contractor in writing of each claim and the Contractor shall promptly remove and replace with new parts, or if agreed by Engineer, remove, repair and replace (or repair in place) all parts which fail under the terms of this Guarantee Section, including parts damaged as a result of defect in, or malfunction of other bus parts, all without any expense to Authority.

In the event the Contractor fails to comply promptly with the written order of the Engineer to repair, replace or correct damaged or defective work, materials, specialties, equipment and accessories, the Contract Officer shall, upon written notice to the Contractor, have authority to deduct the cost of such repair, replacement or correction from any compensation due or to become due the Contractor. In the event the Contractor has been paid, the Contractor agrees to reimburse Authority for the cost thereof.

Any Authority labor, material and facilities used in connection herewith shall be paid for by the Contractor in accordance with SECTION 20, AUTHORITY LABOR, MATERIALS AND FACILITIES.

SECTION 17 - PARTS AVAILABILITY

Contractor agrees to guarantee the availability to the Authority of bus replacement parts for a period of six (6) years following completion of Contractor's delivery of buses. Contractor agrees that all bus replacement parts shall be interchangeable with parts and equipment supplied in the original buses.

SECTION 18 - AUTHORITY OF THE ENGINEER

- A. The "Engineer" shall be the principal contact between Authority and Contractor and will handle, on behalf of Authority, all matters within the scope of the Engineer's authority under the Contract Documents. Decisions and orders of the Engineer are subject to appeal under SECTION 29 - DISPUTES.

SECTION 18 - AUTHORITY OF THE ENGINEER (Continued)

- B. The Contractor shall proceed on the basis of any order or decision of the Engineer except for those for which the Contractor proposes to make claim for change in cost, noise level or delivery. When the Contractor proposes to make such claim as a result of an order or decision of the Engineer, the provisions of SECTION 21 - CHANGES shall be followed by the Contractor before proceeding.
- C. The Engineer may reject any design or work proposed or supplied which the Engineer determines is not in conformance with Detail Specifications; is not suitable for Authority operation, maintenance or safety practices; or is not suitable for Authority environment.

The Engineer will determine which alternate products, proposed by the Contractor subsequent to the Pre-Bid meetings, are qualified and may be used by the Contractor.

The Engineer will interpret all questions concerning the meaning and intent of the Detail Specifications including drawings.

The Engineer may accept variations from requirements of the Detail Specifications requested by the Contractor and which are in accordance with the intent of the Detail Specifications.

- D. All orders and decisions of the Engineer will be confirmed promptly by written instruments. When such order or decision rejects a design, material or work proposed or accomplished by the Contractor, such instrument of rejection shall include the reasons for rejection.

SECTION 19 - INSPECTION, TESTS AND ADJUSTMENTS

- A. The Contractor shall perform or have performed the inspections and tests (except those performed solely by the Authority) required to substantiate that the work provided under the Contract conforms to the Contract Documents. The observation and record of the inspections and tests shall be made available to the Engineer, if requested.
- B. The Contractor shall provide and maintain an inspection system acceptable to the Engineer covering the work hereunder. Records of all inspection work by the Contractor shall be kept complete and available to the Engineer during the performance of this Contract and for such longer period as may be specified elsewhere in this Contract.
- C. All material and equipment furnished under the Contract shall be new and all work shall be subject to inspection and test by the Authority to the extent practicable at all times and places including the period of manufacture, and in any event prior to acceptance and/or surveillance of Contractor's inspection at the discretion of the Authority.

SECTION 19 - INSPECTION, TESTS AND ADJUSTMENTS (Continued)

- D. All samples for analyses and tests shall be taken in such manner as to be truly representative of the entire lot under test and shall not be worked on in any way to alter the quality before testing. Where expressly permitted by the Engineer, in the case of materials taken from stock or for use in minor parts, certified analyses and tests of the Manufacturer, furnished in triplicate may be accepted by the Engineer. In case the records of physical and chemical tests of stock materials are not available, the results of a reasonable number of tests shall be furnished to the Engineer, free of charge, as required by the Engineer to satisfy him as to their qualities.

Inspection and tests of fabricated parts and manufactured articles shall be made by such methods and at such times as will insure compliance with this Specification in all respects. Inspection of all metal work shall be made before painting.

- E. Material, equipment or parts thereof intended for use on these buses, which shall be rejected by the CTA for not conforming to this Specification shall be clearly marked and so disposed of as to assure that it will not be used, or offered for use, again on these buses unless reworked and accepted by the Engineer.
- F. The Builder will place each motor bus on a hoist or over a suitable pit in order that the underfloor equipment might be inspected. Facilities will also be provided for physical inspection of the roof of the bus. When each motor bus is completed and ready for shipment, the Engineer will make an inspection and sign a certificate which authorizes shipment.
- G. The Contractor and his major Subcontractors shall provide office space when needed suitable to and for use by the Engineer in managing this Contract, performing inspections, witnessing tests, maintaining records, auditing the quality control program, reviewing incorporation of design and configuration changes, and similar tasks. Such office space shall be adequate, in the opinion of the Engineer, for the intended purpose, and shall be equipped, utilities supplied, furnished, maintained, cleaned and security protected, as necessary, by the Contractor in a manner equivalent to that provided by the Contractor for performing similar functions within his own shop and office facilities.
- H. In case any work is not in conformity with the requirements of this Contract, the Engineer shall have the right either to reject it or to require correction. Work which has been rejected or required to be corrected shall be removed or, if permitted or required by the Engineer, corrected in place by and at the expense of the Contractor promptly after notice, and shall not thereafter be tendered for acceptance unless the former rejection or requirement of correction is disclosed. If, after written notice, the Contractor fails promptly to replace or correct such work, the Contract Office either (1) may by Contractor for cost occasioned the Authority thereby; or (2) may terminate this Contract for default as provided in SECTION 28 - DEFAULT.

SECTION 19 - INSPECTION, TESTS AND ADJUSTMENTS (Continued)

- I. If any inspection or test is made by the Engineer on the premises of the Contractor or a Subcontractor, the Contractor without additional charge shall provide all reasonable facilities and assistance for the safety and convenience of the Engineer's inspectors in the performance of their duties. If the Engineer's inspection or test is made at a point other than the premises of the Contractor or a Subcontractor; it shall be at the expense of the Contractor except as otherwise provided in this Contract; provided, that in case of rejection the Authority shall not be liable for any reduction in value of samples used in connection with such inspection or test. All inspections and tests by the Engineer shall be performed in such manner as not to unduly delay the work. The Contract Officer reserves the right to charge to the Contractor any additional cost of inspection and test when the work is not ready at the time such inspection and test was scheduled by the Contractor or when reinspection or retest is necessitated by prior rejection. Acceptance or rejection of the work shall be made as promptly as practical, except as otherwise provided in this Contract; but failure to inspect and accept or reject work shall neither relieve the Contractor from responsibility for such work as is not in accordance with the Contract requirements nor impose liability on the Authority thereof.

The inspection and test by the Engineer of any work thereof does not relieve the Contractor from any responsibility regarding defects or other failures to meet the Contract requirements or the proper functioning of the part, sub-system or bus which may be discovered after acceptance.

- J. If the Contract Officer shall have reasonable evidence that defective work has been permitted by the Contractor or the Subcontractors, or that defective materials have been used, and shall desire to make an examination of work partly or fully completed, the Contractor or Subcontractor shall furnish the appliances and labor for making such investigation and inspection as may be required by the Engineer. Any defective work which may be disclosed shall be promptly corrected. If investigation discloses no defect, the expense of such investigation, including any additional cost incurred by the Contractor as a result thereof, shall be borne by the Authority; and the delivery schedule shall be adjusted accordingly, if necessary.
- K. The roofs, windows, windshields, ventilators and dampers of all buses shall be water tested for weather tightness with bus subjected to continuous spray from suitably located nozzles so that the bus is completely covered with sprayed water in the course of the test. The pressure and rate of flow of the water from the nozzles during the test shall require approval of the Engineer. This test shall be continued long enough to enable inspection to be made of the bus for determining location of any leaks. All leaks found during the test shall be corrected by the Builder to the satisfaction of the Engineer.
- L. The complete bus, all working and moving parts and operating devices shall be tested, adjusted and put in operating condition by the Builder and approved by the Engineer before buses are released for shipment to the CTA.

SECTION 19 - INSPECTION, TESTS AND ADJUSTMENTS (Continued)

- M. The Builder shall perform the exterior sound level test as set forth in SAE Standard SAE J366b under the witness of the Engineer on one bus. The bus to be tested shall be chosen by the Engineer.
- N. The Builder shall perform the lighting level test under the witness of the Engineer on one bus. The bus to be tested shall be chosen by the Engineer.

SECTION 20 - AUTHORITY LABOR, MATERIALS AND FACILITIES

- A. Authority shall be under no obligation to provide Authority work or Authority facilities in the performance of requirements which are obligations of the Contractor under terms of the Contract Documents, unless specifically so stated in the Contract Documents. When Authority work or facilities are used in the performance of obligations of the Contractor, either by mutual agreement or as permitted by terms of the Contract, the Contractor shall reimburse Authority for such cost, computed as detailed below.
- B. The Contractor shall pay for Authority supplied labor at the appropriate hourly rate for such labor, plus an amount equal to that Authority adds to its wage costs to cover the cost of employee fringe benefits, plus an amount for general and administrative overhead based on a rate applied to the actual labor costs not including fringe benefits.
 - 1. The appropriate hourly rate for shop and maintenance employees shall be the average hourly rate of all such bus maintenance employees for the pay period following the latest change in wage rates prior to the time the work is done, as determined by dividing the total amount of wages paid for such period by the total number of hours worked by such employees, including the cost-of-living allowance in force at the time the work is done.
 - 2. The appropriate hourly rate for Authority employees, other than those of No. 1 above, is the current hourly rate of the employee, including cost-of-living allowance, in force at the time the work is done.
- C. The Contractor shall pay for Authority supplied materials, specialties, equipment and accessories in the amount which is the sum of the purchase price plus the then current rate for handling charges, plus any delivery charges.
- D. The Contractor shall pay for Authority supplied facilities in an amount to be negotiated.

SECTION 21 - CHANGES

- A. Upon written request by the Engineer for a Change Order Proposal, Contractor shall provide such proposal within thirty (30) days after date of request. Contractor's Proposal shall be in sufficient detail to clearly show the Engineer the work which would be done and to permit the Engineer to confirm the proposed cost. The Proposal will be accepted or rejected by the Contract Officer within ninety (90) days after receipt of the Proposal.
- B. The Contract Officer may at any time, by a written order, and without notice to the Sureties, make changes within the general scope of the Contract Documents. If any such change order causes an increase or decrease in the cost, weight, noise levels or the time required for the performance of any part of the work under this Contract, an equitable adjustment shall be made in the Contract price, delivery schedule, schedule of weights, noise level, or all, and the Contract shall be modified in writing accordingly. However, where no agreement on price, weight, noise level and/or time required is reached, it shall not excuse the Contractor from proceeding with the Contract, as changed, pursuant to the written order of the Contract Officer. Failure to agree to any adjustment shall be a dispute to be settled according to the manner prescribed in SECTION 29, DISPUTES.

SECTION 22 - EFFECTIVE DATE OF CONTRACT AND TIME OF STARTING WORK

The effective date of the Contract shall be the date that the Proposal has been accepted and signed by the Chairman of the Authority. After such acceptance of the Proposal and the furnishing of a satisfactory Performance Bond and Insurance, the Contractor will be notified in writing by the Contract Officer of a definite calendar date upon which work shall be commenced by the Contractor and from which date the completion time will be measured.

This written notice will be sent to the Contractor within fifteen (15) calendar days after the Chairman of the Authority has signed the Contract.

SECTION 23 - DELIVERY

- A. The Contractor shall deliver the twenty (20) buses no later than one hundred eighty-three (183) calendar days after the dates specified in Section 22, EFFECTIVE DATE OF CONTRACT AND TIME OF STARTING WORK.
- B. Bus deliveries are acceptable for receipt on Chicago Transit Authority property only between the hours of 8:00 AM and 4:00 PM on Monday through Friday. Location of bus delivery shall be designated by the Engineer.
- C. A bus shall be considered as delivered on the day when it is received on Chicago Transit Authority property complete and in compliance with the Contract.

SECTION 23 - DELIVERY (Continued)

- D. The certificate which the Engineer signs at the Builder's plant is only an authorization to ship the bus. The Contractor shall be responsible for the delivery of the bus to the property of the Chicago Transit Authority, F.O.B., the designated destination.
- E. If buses are delivered over-the-road, a report shall be submitted by the driver, listing all incidents and unusual bus performances occurring during the trip. Speed and operation of the bus enroute to Chicago Transit Authority property shall be controlled to prevent damage to any part of the bus.
- F. If buses are delivered over-the-road and the trip is interrupted for any reason requiring service or repair, the Builder shall submit a report to the Director, Equipment Engineering describing the nature of the service or repair, the cause and the restoration required to continue the trip. This shall be a comprehensive engineering report rather than a driver's explanation.
- G. If any bus is delivered incomplete, incorrect or contains any defective or damaged parts, the Builder shall, at his expense, furnish and replace such parts as acceptable to the Engineer. The Chicago Transit Authority shall not be required to furnish space, labor or material to perform Builder's responsibilities so as to permit acceptance of a bus in compliance with this Specification.

SECTION 24 - ACCEPTANCE

The bus when received by the Authority, will be given an inspection to determine if it is in acceptable operating condition for revenue service. The Authority will notify the Contractor, in writing, within fifteen (15) days after delivery if the bus has or has not been accepted. A letter of non-acceptance will furnish details of the deficiencies. The Contractor shall correct all defects and resubmit the car for acceptance. The Authority will accept or reject the resubmitted bus within fifteen (15) days from date of resubmittal. When accepted, a "Certificate of Acceptance of Vehicle", CTA Form No. MM 101, shall be executed accepting the bus and authorizing payment. The date of acceptance shall be when this certificate is signed by the Contract Officer and shall not be later than fifteen (15) days after date of delivery or resubmittal.

SECTION 25 - TITLE AND RISK OF LOSS

- A. Any risk of loss or damage to the bus or to any part thereof either prior to acceptance thereof or thereafter while in the possession of the Contractor or under his control is assumed and shall be borne by the Contractor, and any such loss or damage shall be made good by the Contractor at his own cost, and the performance of the Contract shall be carried forward by him in accordance with this Contract without additional cost to the Authority by reason of such loss or damage.

SECTION 25 - TITLE AND RISK OF LOSS (Continued)

- B. Title to the bus shall pass to Authority upon delivery at the delivery point designated. Passage of title as provided herein shall not modify any right or obligation of the parties under these Contract Documents.

SECTION 26 - PAYMENT

The Contractor shall receive payment in cash as set forth in the Contract Bid Proposal as accepted by the Chicago Transit Authority. The Contract price will be paid for each completed motor bus when delivered to, and accepted by, the Chicago Transit Authority.

The Builder shall furnish to the Contract Officer individual invoices for each bus with, or prior to delivery of, each bus.

SECTION 27 - LIQUIDATED DAMAGES

- A. Contractor agrees that failure to complete delivery of the buses as scheduled will result in additional costs and tangible and intangible losses to the Authority. Therefore, Contractor agrees to pay Authority \$100 per bus per calendar day for each and every day a bus remains undelivered beyond the dates established in Contractor's schedule of delivery.
- B. Contractor agrees that any moneys paid pursuant to Paragraphs A., of this SECTION 27, are not penalties, but a reasonable attempt to establish agreed measures of damages because of Contractor's failure to conform to the established delivery.
- C. Contractor agrees that any liquidated damages due Authority because of Contractor's failure to comply with the delivery, provisions of the Contract Documents shall be deducted from invoices submitted by Contractor, or if moneys due or to become due Contractor are insufficient, Contractor or its Surety shall pay such sums as have been determined to be liquidated damages.
- D. Contractor shall not be liable for the liquidated damages established in Paragraph A of this SECTION 27 if Contractor's failure to deliver arises out of causes beyond his control and without the fault or negligence of the Contractor. Such causes may include, but are not restricted to, acts of God or of the public enemy, acts of the Government in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather, but in every case the failure to perform must be beyond the control and without the fault or negligence of the Contractor. If the failure to perform is caused by the failure of a Subcontractor to perform or make progress, and if such failure arises out of causes beyond the control of both the Contractor and Subcontractor, and without the fault or negligence of either of them, the Contractor

SECTION 27 - LIQUIDATED DAMAGES (Continued)

D. (Continued)

shall not be liable liquidated damages unless (a) the supplies or services to be furnished by the Subcontractor were obtainable from other sources, and (b) the Contract Officer shall have ordered the Contractor in writing to procure such supplies or services from such other sources, and (c) the Contractor shall have failed to comply reasonably with such order. Upon request of the Contractor, the Contract Officer shall ascertain the facts and extent of such failure and, if he shall determine that any failure to perform was occasioned by any one or more of the said causes, the delivery schedule shall be revised accordingly, subject to the rights of the Authority under SECTION 28 - DEFAULT or SECTION 8, Paragraph G, TERMINATION OF CONVENIENCE. There shall be no relief afforded the Contractor, under this Paragraph, other than an extension of time for completion of performance or a part thereof.

SECTION 28 - DEFAULT

- A. The Contract Officer may, subject to the provisions of Paragraph (C) below, by written notice of default to the Contractor, terminate the whole or any part of this Contract in any one of the following circumstances:
1. If the Contractor fails to make delivery of the work within the time specified herein or any extension thereof; or
 2. If the Contractor fails to perform any of the other provisions of this Contract, or so fails to make progress as to endanger performance of this Contract in accordance with its terms, and in either of these two circumstances does not cure such failure within a period of ten (10) days (or such longer period as the Contract Officer may authorize in writing) after receipt of notice from the Contract Officer specifying such failure.
- B. In the event the Authority terminates this Contract in whole or in part as provided in Paragraph A of this Section, the Authority may procure, upon such terms and in such manner as the Authority may deem appropriate, work similar to that so terminated, and the Contractor shall be liable to the Authority for any excess costs for such work: provided, that the Contractor shall continue the performance of this Contract to the extent not terminated under provisions of this clause.
- C. Except with respect to defaults of Subcontractors, the Contractor shall not be liable for any excess costs if the failure to perform the Contract arise out of causes beyond the control and without the fault or negligence of the Contractor. Such causes may include, but are not restricted to, acts of God or of the public enemy, acts of the Government or Authority in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes,

SECTION 28 - DEFAULT (Continued)

- C. (Continued)
and unusually severe weather; but in every case the failure to perform must be beyond the control and without the fault or negligence of the Contractor. If the failure to perform is caused by the default of a Subcontractor, and if such default arises out of causes beyond the control of both the Contractor and Subcontractor, and without the fault or negligence of either of them, the Contractor shall not be liable for any excess costs for failure to perform, unless the work to be furnished by the Subcontractor was obtainable from other sources in sufficient time to permit the Contractor to meet the required delivery schedule.
- D. If the Contract is terminated as provided in Paragraph (A) of this Section, the Contract Officer, in addition to any other rights provided in this Section, may require the Contractor to transfer title and deliver to the Authority, in the manner and to the extent directed by the Contract officer (i) any completed work, and (ii) such partially completed supplies and materials, parts, tools, dies, jigs, fixtures, plans, drawings, information and contract rights (hereinafter called "manufacturing materials") as the Contractor has specifically produced or specifically acquired for the performance of such part of this contract as has been terminated; and the Contractor shall, upon direction of the Contract Officer, protect and preserve property in possession of the Contractor in which the Authority has an interest. Payment for completed cars shall be at the contract price. Payment for manufacturing materials delivered to and accepted by the Contract Officer and for the protection and preservation of property shall be in an amount agreed upon by the Contractor and Authority; failure to agree to such amount shall be a dispute concerning a question of fact within the meaning of SECTION 29 - DISPUTES. The Contract Officer may withhold from amounts otherwise due the Contractor for such completed cars or manufacturing materials such sum as the Contract Officer determines to be necessary to protect the Authority against loss because of outstanding liens or claims of former lien holders.
- E. If, after notice of termination of this Contract under the provisions of this Section, it is determined for any reason that the Contractor was not in default under the provisions of this Section, or that the default was excusable under the provisions of this Section, the rights and obligations of the parties shall be the same as if the notice of termination had been issued pursuant to SECTION 8, Paragraph G, TERMINATION OF CONVENIENCE.
- F. The rights and remedies of the Authority provided in this Section shall not be exclusive and are in addition to any other rights and remedies provided by law or under this Contract.
- G. As used in Paragraph (C) of this Section, the terms "Subcontractor" and "Subcontractors" mean Subcontractor (s) at any tier.

SECTION 29 - DISPUTES

Except as otherwise provided in this Contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contract Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Contractor. The decision of the Contract Officer shall be final and conclusive unless within thirty (30) days from the date of receipt of such copy, the Contractor mails or otherwise furnishes to the Authority a written appeal addressed to the General Manager. The decision of the General Manager or his duly authorized representative for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence. In connection with any appeal proceeding under this clause, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the Contract in accordance with Contract Officer's decision. This SECTION 29 - DISPUTES does not preclude consideration of law questions in connection with decisions provided above: provided, that nothing in this Contract shall be construed as making final decision of any Authority representative, or Board, on a question of law.

SECTION 30 - MOLDS, DIES, TOOLS, PATTERNS AND DRAWINGS

The Contractor is advised that all, drawing, special molds, patterns, dies, tools and other special apparatus used in the production of these buses are the sole property of the Authority. The Contractor is advised that prior to final payment of the Contract, he shall give a complete written account of these items to the Engineer. The Contract Officer will advise the Contractor, in writing, of what items will be shipped to the Authority. All items which the Authority advises the Contractor has no use for may be disposed of by the Contractor.

SECTION 31 - PERFORMANCE BOND

The Contractor shall furnish a performance bond as required by the provisions under Paragraph 15, Instruction to Bidders. If any of the sureties on said bond at any time fail financially, or are deemed to be insufficient security for the penalty of said bond, then in that case the Contract Officer may, on giving ten (10) days notice thereof in writing, require the Contractor to furnish a new and additional bond with such sureties thereon as shall be satisfactory to the Contract Officer.

CHICAGO TRANSIT AUTHORITY

DETAIL SPECIFICATIONS
SECTION 1 TO SECTION 26

OF

SPECIFICATION NUMBER CTA 4200-76

FOR

SMALL MOTOR BUSES

FOR

THE MOBILITY LIMITED

AUGUST 1977

SECTION 1 - FRONT AXLE

- A. The front axle assembly shall be of the heavy-duty type designed to carry loads imposed upon it by conditions encountered in normal Chicago Transit Authority service.

The front axle shall be rated at a minimum of 5,000 pounds.

- B. All friction points on the front axle shall be equipped with replaceable bushings or inserts and lubrication fittings.
- C. Tie rod and drag link assemblies shall be equipped with grease fittings.
- D. Front axle assembly shall require the review and consent of the Engineer.

SECTION 2 - REAR AXLE

- A. Rear axle shall be of the banjo, full floating, heavy-duty type. Axle shall be of the proper size to carry the loads imposed upon it by conditions encountered in normal Chicago Transit Authority operation.

The rear axle shall be rated at a minimum of 10,000 pounds.

- B. Axle shall have replaceable load tubes.
- C. The differential gear ratio shall be such as to provide the desired performance as described in Section GS-1 of the Specification.
- D. Drain and filter plugs shall be of the magnetic, external type hex head.
- E. Rear axle assembly shall require the review and consent of the Engineer.

SECTION 3 - BODY & PAINTING

3.01 General

The following dimensions and characteristics are detailed below in order to indicate the size and type vehicle desired:

1. Rated passenger seating capacity without wheel chair provisions 23
2. Length over bumper 25 ft. ± 1 ft.
3. Outside body width, exclusive of exterior mirrors, rubber fenders and side lights 96 in.
4. Height overall, not to exceed 125 in.
5. Reference weight of bus, with full complement of fuel, oil and water 10,000 lbs.
6. Body clearance radius at outside front corner of bumper, for either right hand or left hand turn, not to exceed 25 ft.
7. Road clearance between bus and ground with vehicle loaded at GVWR not less than 8 in.
8. Approach angle, departure angle and ramp breakover angle minimum 10 degrees
9. Bottom step height from ground, maximum of 13.5 in.
10. Headroom in center of longitudinal aisle, not less than 75 in.
11. Clear width of door opening, minimum of 36 in.

3.02 - Body and Underframe - General

- A. Body and underframe shall be of durable construction, adequately reinforced at all joints and points of stress concentration, so that the bus will carry one and one-half the rated seat load with sufficient leeway in structural strength to safely withstand road shocks and other conditions normally found in Chicago Transit Authority service. The underframe shall be stiff enough to prevent floor from excessive flexing under maximum loads. High strength corrosion-resistant materials shall be used in the construction of the body and underframe. Firewall shall be steel.
- B. The entire interior surface of the bus exterior sheathing, except the wainscot area involving the heat distribution duct, shall be covered with an approved type protective coating. All joints shall be protected against corrosion and leakage. All contact areas of dissimilar metals shall be insulated to protect against failure from conventional and electrolytic corrosion.

SECTION 3 - BODY & PAINTING (Continued)

B. (Continued)

All materials used in the construction of the bus shall be fire retardant as far as practical. Every effort shall be made to treat materials, which normally can burn, to be fire-retardant.

- C. When panels are lapped, the upper panel shall act as a watershed. Hollow type rivets shall not be used in locations where the falling-out of the pullpin will create a potential water leak.
- D. All insulation, plastics and synthetic materials shall be fire-retardant and self-extinguishing.
- E. The roof, side body and underframe structure shall be designed so that the entire bus frame shall act as one unit without movement at the joints. Reinforcements shall be installed around door opening in order to transfer stresses around the opening.
- F. Special care shall be taken with the outside sheathing, roof, roof bonnets and the interior finish so that all kinks and buckles are removed before assembly and so that they present a true, smooth finish without grinding or cutting material below its standard thickness.

3.03 - Sides and Ends

- A. Exterior side panels shall be steel or aluminum panels, extending from window belt rail to rub rail. Skirt panels below the rub rail shall be smooth steel or aluminum, sufficiently reinforced. The bottom edge of the bottom panels shall be rolled, beaded or stiffened to prevent flexing. The arrangement of the side and rear end construction shall be such as to prevent hitchriding.
- B. Side thermal insulation of minimum 1-1/2" thickness shall be waterproof, fire-retardant, self-extinguishing fiberglass insulation secured and protected by aluminum foil backing sheets.

Insulation shall be secured by an adhesive to exterior panels to prevent movement and vibration compacting.

- C. Rub Rails - Bus shall be equipped with side body rub rails located at the floor level. Rub rail design shall require the review of the Engineer.

3.04 - Roof

- A. Roof shall be sufficiently stiff to prevent vibration, drumming or flexing in service. Sealing and fastening of roof joints shall prevent entrance of moisture or dirt. Fire-retardant insulation shall be installed between roof and ceiling panels. Insulation shall be not less than one and one-half inch thick fiberglass with foil backing.

SECTION 3 - BODY AND PAINTING (Continued)

3.04 - Roof (Continued)

- B. If used, the roof escape door shall be held and be resettable after release from the coach interior. The design of the roof escape installation shall require the review of the Engineer.

3.05 - Roof Appliances

Roof gutters shall be installed over the windows and door. Gutters shall be so designed as not to spill water on operator's exterior mirrors, and intermediate drain holes shall not drain water on windows or doors.

3.06 - Exterior Appurtenances

- A. All exterior light fixtures shall be fitted to the contour of the bus body and adequately sealed with approved sealing compound to prevent entrance of water. Water drain holes, where necessary, shall be provided.
- B. All light fixtures, accessories and appurtenances on the exterior of the bus shall be of such construction and so installed that the bus can run through automatic bus washers currently used by the CTA, without damage to the equipment on the bus or the bus washer.

3.07 - Insulation - Engine Compartment

- A. Acoustical insulation on the entire area of the firewall shall be provided and shall require the review and concurrence of the Engineer.
- B. Thermal insulation on the passenger side of the firewall shall be waterproof, fire-retardant, self-extinguishing polyethylene-bagged fiberglass insulation, secured and protected under not less than 0.050 inch thick aluminum sheet.

3.08 - Interior Panels

- A. Interior panels shall be attached so that there are no exposed edges or rough surfaces. Panels shall not be readily removable by passengers. Panels shall be firmly attached to prevent flexing or drumming. Interior panels and trim shall be fire resistant. Use of molding and trim shall be minimized. Interior panel design shall require the review of the Engineer. Interior color scheme shall be chosen by the Engineer.

3.08 - Interior Panels (Continued)

The entire interior shall be cleanable with a hose, using a liquid soap attachment.

All interior fittings including lights, vents shall appear to be integral with the interior. Hazardous protuberance shall be avoided.

3.09 - Floor

- A. The floor shall be 3/4", 5-ply, EXTERIOR type, minimum Grade AC, plywood treated to resist decay and mold. All plywood edges shall be treated or sealed to prevent entrance of moisture before installation.
- B. The plywood sections shall be as large as is practical, and all splices of the flooring shall be made directly on a structural member and/or satisfactory extension thereof.
- C. Floor fasteners shall be placed on each side of the splices and shall be secured and protected for the life of the coach. An anti-squeak material shall be placed between the floor and underframe members and around wheelhousing.
- D. As far as is practical, the walking area of the floor shall be level throughout.
- E. Underframe shall have sufficient stiffeners to keep the flooring from excessive flexing under maximum loads.
- F. Safety steel guards shall be installed to protect passengers and driver from injury by flying fragments due to failure of the engine, transmission or drive line parts.

3.10 - Floor Covering

- A. The floor aisle and entrance area shall be covered with 3/16 inch, non-skid, sanded back, longitudinal ribbed, composition rubber material that shall remain effective in all weather conditions.
- B. All floor and step covering shall be black, except for step and entrance area nosings which shall be solid yellow hypalon.
- C. The aisle strip shall extend in one piece from the rear seat to the entrance area.
- D. A piece of the same material shall be laid between the aisle strip and and rear wheel housings with ribs parallel to the ribs in the aisle strip.

SECTION 3 - BODY AND PAINTING (Continued)

3.10 - Floor Covering (Continued)

- E. The floor covering in the entrance area shall have longitudinal and transverse ribs mitered at 45 degrees to face the door.
- F. Between the aisle strip and the sides of the body, the floor covering shall be 1/8-inch thick, sanded back, smooth top black composition rubber material.
- G. The operator's platform area shall be covered with 3/16-inch, sanded back smooth top black composition material.
- H. Just prior to the application of the floor covering, the entire floor shall be thoroughly sanded and then completely cleaned of all foreign material. The floor covering shall be butt jointed and cemented to the plywood floor to comply with the floor covering and adhesive manufacturer's recommendations. The gap in the butt joints shall not exceed 1/16-inch.

3.11 - Side Windows

- A. The side window area shall be as large as possible to give the seated and standing passengers an unobstructed exterior view. Details of the window design shall be reviewed and require the concurrence of the Engineer.
- B. The side windows shall be of a sliding type, limited to open a maximum of four (4) inches, by stops. They shall slide freely with minimal effort, of approximately 10 lbs. The window tracks shall be polymer or nylon extrusions. The sash shall have a locking device that shall also prevent the opening and closing of the window due to acceleration and deceleration of the bus.
- C. The windows shall be adequately sealed to prevent the entrance of air and water when closed.
- D. The sash shall be provided with an emergency push-out feature, designed to allow quick resetting by the bus operator. Emergency push-out instructions shall be furnished and installed at each seat and wheelchair location.
- E. Drain holes shall be incorporated in the sash frame to allow interior condensation to drain to the exterior. Body and sash construction shall be such that the sash drain will prevent entrance or back-up of water into the coach.
- F. The side windows shall be easily replaceable and shall be sized so that they are interchangeable.

SECTION 3 - BODY AND PAINTING (Continued)

3.11 - Side Windows (Continued)

- G. Side windows shall be glazed with 1/4-inch, single dense, 28% green tint, safety tempered glass.

3.12 - Windshield

- A. The windshield shall permit a driver whose vision is 48 inches above the seat platform and directly over center of the seat pedestal post to see the ground to within 72 inches of the front bumper. Vertical vision arc shall be approximately 60 degrees from lower vision point.
- B. The windshield shall be designed to minimize both external and internal glare and reflections.
- C. The upper portion of the windshield above the driver's field of view shall be tinted green.
- D. The windshield shall be set in rubber glazing channels and shall be easily replaceable.
- E. Windshield shall be glazed with 1/4-inch laminated safety glass.
- F. An adjustable, padded, vinyl covered, sun visor shall be installed for operator's use. It shall be possible to swing the sun visor to the driver's side window. The installation shall preclude vibration in normal street operation. The surface of the sun visor shall be non-reflective to meet requirements of FMVSS 107. The color of the sun visor shall coordinate with the interior color of the headliner. The sun visor design and installation shall require the review and concurrence of the Engineer.
- G. A grab handle, or handles, shall be installed in a convenient location to enable operator to stand on the front bumper to clean the windshield without holding onto the windshield wiper arms. Grab handles and installation shall require the review and consent of the Engineer.

3.13 - Windshield Wiper

- A. Two variable speed heavy-duty electric windshield wipers of the self parking type shall be furnished.
- B. Windshield washer shall be provided.
- C. The largest wiper blade possible, for windshield design shall be installed.
- D. Wiper motors and windshield washer reservoir shall be installed in an easily accessible location for ease in maintenance and inspection.

SECTION 3 - BODY AND PAINTING (Continued)

3.14 - Rear Window

The rear window is to be provided with an emergency push-out feature similar to that used on the side body windows. The rear window shall be glazed with 1/4-inch single dense green tinted tempered glass.

3.15 - Operator's Side Window

- A. The driver's side window shall be of a sliding type to allow adjustment of the left rear view mirror. The window may be split and with stationary portion fixed in rubber channels. The sliding portion shall move freely without rocking or binding.
- B. The window when closed shall be adequately sealed to prevent the entrance of air and water.
- C. The window shall be glazed with 1/4-inch clear laminated safety glass.
- D. The sash frame shall be designed to drain interior condensation to the exterior.

3.16 - Destination Sign Glass and Front Door Glass

The destination sign and front door windows shall be glazed with 1/4-inch clear tempered safety glass set in rubber channels.

3.17 Door Construction

- A. The coach shall be equipped with a minimal 36-inch wide, 80-inch high, two panel front door located immediately behind the right front wheelwell.
- B. A minimal 36-inch clear opening including all projections shall exist with the front door open. Any projections shall not form a hazard. The 36-inch clear opening shall be maintained to the wheelchair areas.
- C. The structure of the door, its mounting, inside and outside trim, and any exposed mechanism shall be of a durable, corrosion resistant material rigidly reinforced. Positive stops to limit door travel in the open and closed positions shall be provided.
- D. Doors shall be non-rattling in closed position, with weather seals to prevent the entrance of air and water and to keep ice from binding the door shafts. The design of the door shall be such as to limit the formation of ice and snow on the step edges.

SECTION 3 - BODY AND PAINTING (Continued)

3.17 - Door Construction (Continued)

- E. The door design shall provide for adjustments to allow proper alignment. Pivot points on the door and door shaft shall have bushings or bearings which are either permanently lubricated or able to be easily lubricated.
- F. The top and bottom halves of both door leaves shall be glazed for no less than one-half the area of each section with 1/4-inch single, dense green tint tempered glass.
- G. Door construction and design shall require concurrence of Engineer.

3.18 - Door Operation

- A. The door shall be operated by a differential pneumatic type door engine located and concealed above the door which shall be easily accessible for servicing. Door shall be able to be opened and closed manually in case of loss of air.
- B. The door engine shall have adjusting provisions to ensure a door opening and closing time between 1.5 and 2.0 seconds.
- C. The operation of the door shall be controlled by the driver. The door control device shall be located to the left of the driver. The device shall have two clearly labeled positions-door open and door close.
- D. A control device to deactivate door mechanism to allow manual emergency operation of the door shall be located in the driver's compartment.
- E. A manually operated passenger's emergency valve shall be installed in the door engine compartment at the front door and arranged so that when the valve is opened, and with air in the door control system, door shall open regardless of position of operator's door control device. The passenger's emergency valve and door engine shall exhaust below the floor. The emergency handle shall be easily operable with 3 - 4 lb. pull tension and shall be conveniently located above the door. Design of emergency handle shall require review of the Engineer.
- F. A brake and accelerator interlock system shall be installed to preclude movement of the coach when the front door is open. These interlocks shall be rendered inoperative along with the door control by a door master switch to allow only emergency operation. Door master switch shall be located out of reach of a seated driver. Actuation of passenger's emergency valve shall activate interlock.
- G. Pressure sensitive door edges using air switches shall be provided on each door leaf to cycle doors open if an object of two (2) inches or greater in width is caught between closing mating doors.
- H. The doors shall be interlocked to prevent closing with lift mechanism not in the fully retracted position.

SECTION 3 - BODY AND PAINTING (Continued)

3.19 Destination Sign

- A. A front roller curtain mechanism shall be installed above the windshield, enclosed in a suitable compartment. The outside viewing area shall be as large as practical but shall have a minimum opening of five (5) inches high and twenty-six (26) inches wide.
- B. The sign curtains shall be illuminated by means of one fluorescent tube.
- C. A peephole of adequate size and located for ease of spotting the sign shall be provided and glazed with abrasion resistant transparent plastic material.
- D. Provision shall be made for easy replacement of the curtain, fluorescent lamp, power ballast and for cleaning of destination sign glass.
- E. Sign curtain material shall be Mylar of 2 mil thickness.
- F. The base Mylar shall have a white, translucent coating applied to one side.
- G. Coated surfaces to be painted must have a matte finish in contrast to the uncoated glass side. Material must be self-extinguishing.
- H. The painted material must show no effects in adhesions or opacity of coating when subject to the following temperatures: 48 hours each at -40 degrees F. minimum low, +225 degrees F. maximum high. At 0 degrees F., the ink on the curtain shall not be brittle or peel, and at 140 degrees F., the ink should not stick. Ink must adhere to Mylar coating after the application and removal of 3-inch #23 masking tape. Paint must not deteriorate from heat of destination sign lamps or direct sunlight.
- I. The standard roller curtain black finish, and two (2) translucent colors, red and blue, shall be required. Each message will be in one color horizontally, some in two.
- J. The sign curtains shall be made from one continuous strip of Mylar. Ends of sign curtains shall be secured by means of wire rods. Securing will be accomplished by three (3) pieces of masking tape - two (2) at the edges and one in the center of the tail of the curtain. There shall be no tape on the wire rod.
- K. Curtains will be secured to the rollers by a 2-inch piece of masking tape, applied in the center of the roller. No other tapes or tape locations shall be used in securing the curtain to either the wire rod or rollers. All tape applications must be "perfectly square" (perpendicular angles).

SECTION 3 - BODY AND PAINTING (Continued)

3.19 - Destination Sign (Continued)

- L. All letters and numbers shall be Helvetica medium type face, capital and lower case letters, with character condensation and expansion as applicable. All front roller curtain reading lists will be provided by CTA indicating route number, route name and destination with exceptions noted. Example of the true Helvetica font is shown on page DR-10 of this Specification.
- M. A photographically reproduceable template (1/4" = 1") of each reading on the provided sign lists will be supplied by CTA. When fully enlarged, actual roller curtain message characters must be + 1/4--inch of photographically enlarged characters. Templates must be returned to CTA upon completion of contract.
- N. All "peephole" readings on the curtains shall have a hashmark denoting "centered". "Peephole" messages are to be produced on both the front and the back of the curtain so that the bus operator will be able to identify the message when exposed.
- O. Front "peephole" messages may be produced in the same ink color of the reading message that it lies next to; rear messages must be produced in black or blue Safford #C-839 Special Marking Ink or equivalent. Rear stampings shall be 2-1/2 inches from the edge of the curtain and must not be applied on the back of the message lettering.
- P. Contractor shall submit his bid on the basis of furnishing all sign curtains screened with 25 readings and 5 color interruptions. The curtain shall be composed of the 25 readings, each with white lettering on a translucent color or black background.
- Q. In addition, and not to be considered in the bid evaluation, the Contractor shall submit prices of the exposure combinations and color interruptions, as called for in the bid proposal form, which unit prices will be added to or subtracted from the contract price only if the Engineer finds it necessary to add to or subtract from the number of readings as specified above. The required reading list and templates will be submitted to the Builder within a reasonable amount of time after award of Contract so as not to affect delivery of the buses.

3.20 - Passenger Seats - General

- A. Seats shall be American Seating Model 6463, Coach and Car Model 701, or approved equal. The two-passenger seat shall be thirty-five (35) inches wide and overall front to back distance shall be twenty-three (23) inches (exclusive of the grabrail).

- B. Interchangeability .

Seat assemblies and components of identical seats shall be mechanically interchangeable.

3.20 - Passenger Seats - General (Continued)

C. Arrangement

The Builder shall submit a complete seating layout diagram showing maximum number of seats with an area allowed for three (3) forward facing wheelchair locations for review and concurrence by the Engineer.

Each wheelchair location shall have longitudinal folding passenger seats for use when the location is not being used for a wheelchair.

The two-passenger seats shall be fixed, forward facing transverse type of an approved design, engineered and installed in accordance with layout drawings.

The knee-to-hip room shall be a minimum of 28.5 inches. Foot room, measured forward along the floor from a point vertically below the front of seat bottom edge shall be no less than fourteen (14) inches.

The seats over the wheel housings shall be longitudinal seats facing inward, providing seating accommodations for two, three or four passengers.

The rear most seat shall provide seating accommodations for five passengers.

Space shall be provided to store a folded wheelchair in a location satisfactory to the Engineer.

D. Fiberglass Requirements

1. The fiberglass shell must meet all test and composition requirements, outlined herein and be of a quality best suited for the purpose intended, consistent with good commercial practice. All information and dimensions shown on Engineering Drawings are an integral part of the Specifications.

2. Composition (all percentage shall be by weight)

a) Polyester resin:

45% (minimum) - Hooker Hetron 32-A or North American Rockwell No. 2002 or equal-fire resistant, color pigmented.

b) Glass Fibers:

25% (minimum) - Swirl mat or approved equivalent, high strength random length, distributed throughout the part in such a manner as to avoid resin rich sections, particularly in high stress areas.

c) Filler:

12% (minimum) - Aluminum hydrate
13% (maximum) - Mineral filler

3.20 Passenger Seats - General Continued)

d) Surface:

Face surface shall have a veil overlay.

3. Physical Properties

<u>Property</u>	<u>Test Value</u>	<u>Test Method</u>
Tensile	10.0 x 1,000 p.s.i. average-minimum	ASTM D-638-D-651
Flexural Modulus	1.0 x 1,000,000 p.s.i. average-minimum	ASTM D-790
Flexural Strength	20.0 x 1,000 p.s.i. average-minimum	ASTM D-790
Moisture Absorption	.5% maximum	ASTM D-570
Flame Resistance	Self-extinguishing	ASTM D-635
Izod Impact Resistance	15.1 lbs./inch average-minimum	ASTM D-256
Barcol Hardness	50 average-minimum	
Specific Gravity	1.75 - 1.90	

4. Ball Drop Test

Sample fiberglass section shall be mounted on test fixture, firmly supported around a 6" diameter opening, and a one-pound solid steel ball shall be dropped 24 inches to the top surface. The part shall show no fractures or signs of failure.

5. Surface Finish and Color

All sharp edges shall be eliminated. Areas that show excessive resin rich condition shall be subject to rejection.

3.21 - Transverse Seats

- A. Transverse seats shall consist of a two-passenger shell supported by a tubular seat frame. The one-piece seat shall be securely fastened to a tubular steel frame with rivets in a manner to provide structural integrity to the seat.

The seat shell shall be molded fiberglass, deeply contoured for body form comfort and occupant retention. The shell must be molded with step down

SECTION 3 - BODY AND PAINTING (Continued)

3.21 - Transverse Seats (Continued)

reliefs in seat and back areas to accept padded inserts. The relief shall be 5/16" in depth and contoured to provide a continuity of the overall body configuration. There shall be a 3/16 inch diameter drain hole at the lowest spot on the relief to allow drainage of moisture.

The seat shell shall be one-piece construction made of fire resistant polyester resin, glass fiber reinforced. The polyester resin shall be color pigmented throughout. The reinforcing high strength glass fibers shall be distributed throughout the seat in such a manner as to avoid resin rich sections, particularly in high stress areas. The molded seat shall be pre-formed and processed in matched metal molds. The seat shall have mottled surface created by the random swirl pattern of the glass fiber, both on the front surface and back. One transverse seat may be required to have an additional seat height.

- B. The seat frame shall be made of 1 inch square, not thinner than 18 gauge, AISI type 304 stainless steel tubing with No.3 finish. The tubular frame shall have an internal reinforcing tube, 7/8 inch square, not thinner than 16 gauge, between the horizontal and vertical framework on both the wall and aisle side as shown on CTA Drawing No. E2-500, Page DR-2.
- C. There shall be a single pedestal mounted at the approximate center line of the aisle side bucket seat. The pedestal shall be AISI type 304 stainless steel with No. 3 finish, designed to withstand all loads and stresses applied to it. Welds shall be on the underside of pedestal base, in a location satisfactory to the Engineer. The pedestal base shall be so designed as to prevent the base from cutting through the floor covering. The anchorage of the pedestal to the floor shall be designed to minimize dirt accumulation.
- D. The seat shall have an energy absorbing grabrail and crash pad of satisfactory quality which shall be capable of decelerating an occupant's head in a vehicle collision to a level that is humanly tolerable at a velocity of 22 feet per second. The grabrail and crash pads shall be constructed of a structure covered with an approved black textured energy absorbing material. The overall design of the grabrail shall be aesthetically pleasing and shall enhance the general appearance of the seat. The grabrail structure shall telescope into the square tube side frame not less than 2-1/2 inches and shall be readily replaceable but attached securely to provide adequate and firm support.
- E. The color of the seat shell shall be light beige.
- F. The padded inserts shall be 1/2-inch in thickness and shall be comprised of a 20 gauge, primer-coated, steel contoured base panel, with 1/2-inch neoprene foam padding covered with a vinyl-coated knitted fabric coated to a normal finished weight of 38 ounces per linear yard, fire-retardant treated in accordance with Federal Specification CCC-A-680 (a), latest issue, Treatment A-1 & F.A.R., Paragraph 25.853 Uniroyal Naugahyde,

SECTION 3 - BODY AND PAINTING (Continued)

3.21 Transverse Seats (Continued)

Decor Polymeric, expanded vinyl supreme quality, floridian grain, DC 16 Beeswax, and DC 64 Mandarin Orange or Goodall Vinyl Fabrics No. 7840-10812 expanded, Beeswax, and Mandarin Orange colors, cologne grain. Color placement of pads throughout the bus shall be selected by the Engineer. The pads shall be interchangeable with the pads received on the previous bus order.

The inserts must withstand the effects of the following tests. Following each test the seat inserts must retain their bucketed shape and be free from blisters. Failure shall be considered to have occurred if there is a loss of adhesion in foam-to-steel and upholstery material-to-foam bonds. There shall be no more than 25% of area on any one side (border) that shall lose its bond. The adhesive bond of upholstery material to foam must remain intact over entire surface. A minimum of 10 shall be tested with no failures.

1. Heat and Artificial Aging:
180 degrees F for 72 hours after 7 days of aging.
2. Temperature Shock Test:
24 hours at 0 degree F and immediately 180 degree F and hold for 72 hours.
3. Squirming Test:
The seat insert shall be assembled in the seat shell with the four attachment screws. The test apparatus consists of a 155-pound wood buttock covered with a 1-inch foam pad. 30,000 rotations shall be performed on the seat insert. Talcum powder shall be used as needed to prevent abrasion and tearing.
4. Drop Impact:
The seat insert shall be assembled in the seat shell with four attachment screws. 1,000 drops of 40-pound bag through each of 6", 8", 10" and 12" shall be performed on the seat insert.

The padded inserts shall be attached to the shell with stainless steel hex head screws and "T" nuts with blind hole; either the screws or "T" nuts shall have a self-locking feature. The steel base, neoprene padding and vinyl covering shall be cemented to each other over their entire surfaces.

3.22 - Longitudinal and Rear Cross Seats

- A. Longitudinal and rear cross seats shall conform to the same general design as the two-passenger cross seats. Longitudinal and rear cross seats shall be composed of two-passenger seat units, and where necessary a single passenger seat unit joined together as continuous sections. The single passenger seat shall be 17 inches wide.

SECTION 3 - BODY AND PAINTING (Continued)

3.22 - Longitudinal and Rear Cross Seats (Continued)

- B. Longitudinal Seats - The longitudinal seat frames shall have stainless steel tubular armrests on the rearward end of the frame. A barrier with both sides finished to match interior panels shall be attached to the armrest. The longitudinal seats shall be permanently attached to the wheelhouses and supported by stainless steel "H" legs. Both front and rear longitudinal seats shall be set back as far as possible in order to provide maximum loading capacity adjacent to the wheelhousings.

The space behind the longitudinal seats and the ends facing the rear of the coach shall be such as to prevent the accumulation of rubbish behind the seats. The design of the trash deflectors shall be such as to eliminate sharp edges and rattles.

3.23 - Wheelchair Jump Seat

- A. Wheelchair jump seats shall be provided at each wheelchair location. This seat shall conform to the same general design as the transverse seat.
- B. The seat shall be equipped with a wheelchair securement device on the bottom of the seat. This device shall be located so as not to create any hazards to either the wheelchair occupant or any other passenger.
- C. The wheelchair jump seat shall be equipped with retractable Type II seat belts designed to hold the wheelchair passenger in place incorporating a lap or pelvic belt and an upper torso belt.

3.24 - Operator's Seat

- A. The operator's seat shall comply with CTA Drawing No. E2-503, Page DR-3, have vertical and longitudinal adjustments, and provisions for regulating the angle between seat cushion and back. All seat adjustment devices shall be sturdy and positive-acting and so designed that adjustments can be conveniently made by the operator in normal driving position. All controls, except the vertical adjustment pedal, shall be located on right side of seat.
- B. The cushion shall be 20 inches plus or minus 1/4 inch wide, with a contoured front edge designed to eliminate pressure under the knees; and padding shall be molded, not shredded, one piece, fire-retardant neoprene foam having an indentation load deflection of 48 pounds, plus or minus 5 pounds, under ASTM-D-1055-69, properly fastened to the base. There shall be a sateen lining between the seat covering and the cushion. The covering shall be perforated with 3/32 inch holes on 7/8 inch centers. The cushion bottom shall be 5 ply exterior type fir plywood, not less than 1/2 inch thick and be completely painted. All hardware shall be attached to the cushion bottom by approved tapping plates or "T" nuts.

3.24 - Operator's Seat (Continued)

- C. The seat back padding shall be molded, not shredded, one piece, fire-retardant neoprene foam, and back panel shall be shaped so as to provide maximum comfort for operator. All hardware shall be attached to the seat back by approved tapping plates or "T" nuts. The seat back shall be covered on the back side with a sheet of not thinner than 0.018 inch thick A.I.S.I. Type 304 stainless steel with No. 3 finish, Rigidized Metals Corporation, with 2WL diamond pattern, or Ardmore Metals with Windsor pattern with long axis on the horizontal, or equal.
- D. Seat cushion and back shall be covered with a vinyl-coated duck fabric, coated to a normal finished weight of 41.5 to 42.5 ounces, per linear yard, fire-retardant treated in accordance with Federal Specification CCC-A-700, latest issue, treatment A-1, Goodall Vinyl Fabrics Super-Redo No. 77425-1040, Cologne grain, or equal. The color of the vinyl covering shall be Goodall Vinyl Fabrics, Beeswax color. The seat back covering shall not be perforated. The Builder shall submit samples of the vinyl-coated fabric he proposes to furnish to CTA for purpose of inspection of fabric, color, grain, and weight, as soon as possible and prior to procurement of the material.
- E. The seat frame shall be constructed of 1 inch O.D., not thinner than 16 gauge, A.I.S.I. Type 304 stainless steel tubing with the exception of the rear cross tube which shall be 1 inch O.D., not thinner than 11 gauge, 4130 normalized steel, and the two tubes in the longitudinal adjustment device which shall be 3/4 inch O.D., not thinner than 16 gauge, 4130 heat-treated steel. The frame shall have such adequate internal reinforcement as to counter any localized failure due to additional bending stresses at the back take-off plane on the rear of the seat. All welds shall be sound and ground to present a finished appearance. The frame shall be as per CTA Drawing No. E2-503, Page DR-3.
- F. Pedestals shall be designed for heavy-duty operation with a positive mechanical locking device to hold the upper seat assembly in any of the set positions. The pedestal shall be designed to keep the upper seat assembly from turning or rocking. The guide bore in the pedestal shall be a minimum of 9 inches high. Pedestal shall be either malleable or ductile iron, annealed cast steel, or cast aluminum. If cast aluminum is used, it shall be of Aluminum Standards, 356-T6 Aluminum. The steel insert, if included in the design, shall be welded to the base plate. The bolt holes in the mounting flange shall be as shown on CTA Drawing No. E2-503, Page DR-3. The pedestal shall be spring-loaded to assist the operator in vertical adjustment upward. The pedestal shall have a locking device to prevent the upper seat assembly from accidentally coming out of the pedestal tube. The pedestal shall be painted with approved baked enamel, finished color to be DuPont No. 57811 Tan.

SECTION 3 - BODY AND PAINTING (Continued)

3.24 - Operator's Seat (Continued)

- G. The maximum upward vertical adjustment shall be not less than 3 inches above the minimum height of 17 inches from floor to top of seat cushion. The vertical adjustment shall be controlled by a foot trip lever mounted in front of the pedestal not more than 2 inches above the floor and extending out not less than 8 inches nor more than 10 inches from the center line of the pedestal tube, and shall be so designed that it is impossible for the seat to be tripped accidentally allowing the seat to fall. The locking dog shall be so designed that seat must be raised slightly with pressure on the control panel to permit a downward adjustment.
- H. The longitudinal adjustment shall have a range of not less than 4 inches, adjustable to not fewer than five (5) positions. The maximum distance from the center line of pedestal tube to the front and rear of the seat shall be as shown on CTA Drawing No. E2-503, Page DR-3. The longitudinal adjustment shall be accomplished by means of four (4) seat guide clamps, which are bolted to the pedestal head, sliding on two (2) 3/4 inch O.D. tubes which are structural members of the upper seat assembly. The 3/4-inch O.D. tubes shall be mounted on 6-3/4 inch centers and shall be 16 gauge or thicker, 4130 heat-treated steel. The indexing device shall be a plunger type so designed that the control knob is pulled out to adjust.
- I. The cushion tilt adjustment shall have a range of 0 inches to 2 inches adjustable to three (3) or more positions. The tilt adjustment device shall provide two (2) points of support at the rear of the cushion which shall be located as near the outer side edges of the cushion as possible, or one long support may be provided. The tilt adjustment shall be accomplished by either one of the two following devices: two (2), four-sided cams mounted off-center on a common 3/8 inch solid steel shaft; or a rectangular steel plate 2 inches by 10 inches not less than 1/8 inch thick, pivoting about a cross tube in the seat frame which engages catches mounted on the bottom of the cushion. The front of the cushion shall rest on the seat frame and be secured by two (2) straps, one (1) located at each front corner.
- J. The back adjustment device shall be designed so as to provide four (4) different adjustments within a 12 degree range.
- K. The operator's seat shall have a seat belt, meeting requirements of the Federal Motor Vehicle Safety Standard No. 207 and No. 210. The seat belt shall have an automatic ratcheting retractor on the left hand side.
- L. The protrusion of the operating control handles and levers beyond the general profile of the seat assembly shall be a minimum, commensurate with their efficient function and shall require the concurrence of the Engineer.

☐ APPROVAL
☐ COMMENTS

WILL YOU PLEASE

- ☐ SEE ME
- ☐ RETURN
- ☐ REPLY FOR MY SIGNATURE
- ☐ FORWARD TO _____
- ☐ RESPOND TO ME IN WRITING _____
- ☐ COORDINATE WITH _____
- ☐ HANDLE BEFORE _____
- _____
- _____

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SECTION 3 - BODY AND PAINTING (Continued)

3.25 - Mirrors

A. Exterior Mirrors

1. Corrosion-resistant fully adjustable mirrors shall be installed on each side of the coach. Mirrors shall be 8 inches x 8 inches - 3/16-inch flat glass.
2. The mirrors shall fold flat against the coach sides or front windshield to prevent damage by the automatic bus washer.
3. The exterior right side mirror shall not be less than 78 inches above the ground level.

B. Interior Rear View Mirrors

1. An interior rear view mirror, 4 inches x 16 inches shall be mounted ahead of, and above the operator's position to provide a general view of the interior of the bus.
2. An interior mirror shall be mounted on the ceiling near the door so as to provide the operator with a view of the stepwell area and outside area adjacent to the lower step. Mirror shall be a twelve (12) inch diameter convex type. Location of mirror shall not interfere with passenger movement.

3.26 - Grab Rails and Stanchions

- A. The rails and stanchions shall be made of 1 inch steel tubes with integrally molded black padding. The padding shall be of an adequate design to minimize an injury to a passenger striking stanchion in a crash condition and to withstand normal usage as a handhold. Overall design of stanchions including thickness and material of padding shall require the review and concurrence of the Engineer.
- B. All grab rails and stanchions shall be properly supported and held in place with slip joints sufficiently long to keep stanchion from sliding out. There shall be a 1/4-inch travel before stanchion bottoms in the socket. Butt end joints in grab rails shall be avoided, but, if necessary they shall be made under a fitting or hanger bracket.
- C. All fittings shall be stainless steel and finish of fittings shall match the stanchions as near as possible and shall require the approval of the Engineer. Each "T" connection shall have a sufficient number of Type 430 stainless steel or hard chrome plated, 1/4-inch male and female bolts to prevent the "T" joints from slipping. The seam, in the stainless steel covering on the tubes, shall be turned to be out-of-sight as far as possible.

SECTION 3 - BODY AND PAINTING (Continued)

3.26 - Grab Rails and Stanchions (Continued)

- D. There shall be no less than 1-1/2 inches of knuckle room clearance at stanchions or grab rails.
- E. Vertical stanchion shall be provided at rear of passenger door at the aisle. Horizontal grab rail shall extend from this stanchion to wall. The operation of door shall not create a pinching and bumping hazard to a passenger seated or standing holding this horizontal grab rail.
- F. A vertical stanchion shall be required as part of the driver's barrier. Vertical stanchions shall be installed so that it is possible to move the full length of coach without losing support.
- G. Location of stanchions will be determined by the Engineer on the seating layout diagram.
- H. Grab rails shall be installed at the front door to aid boarding and alighting passengers.
- I. Grab rail shall be provided in the lift area to enable a person standing on lift to adequately steady himself during lift operation.

3.27 - Barrier Panels

A. Passenger Door Barrier

A barrier panel shall be installed at the rear of the front stepwell between the stanchion and the sidewall extending from 1 to 2 inches above the floor to the horizontal grab rail. Barrier shall be finished on both sides matching interior sidewall panels.

B. Operator's Barrier

A barrier shall be installed in back of the operator's seat, extending from the headlining to approximately 1/4-inch above the operator's seat back when the operator's seat is adjusted to its maximum height position vertically, maximum rear position horizontally and with the seat back at maximum backward tilt position, and from the stanchion adjacent to the operator's seat, to the left side of bus. The barrier shall be located 2-1/2 inches from vertical stanchion to provide a grab handle for passengers. The barrier shall be finished on both sides to match interior sidewall panels. The distance from the barrier to the nearest edge of steering wheel shall be a minimum of twenty-two (22) inches.

C. Wheelchair Barrier

A barrier panel shall be installed behind each wheelchair location to provide a place for the rear of the wheelchair to butt against and to

SECTION 3 - BODY AND PAINTING (Continued)

3.27 - Barrier Panels (Continued)

C. Wheelchair Barrier (Continued)

provide stability for the wheelchair. A padded stanchion shall be provided on the aisle side of each of these barriers. Barrier shall be finished on both sides matching interior sidewall panels.

D. Barrier Padding

Barrier panels that have a transverse seat facing them shall have the top edges padded. The padding material for the stanchion and top edge shall be of the same design as described in SECTION 3.26, GRAB RAILS AND STANCHIONS.

3.28 - Bumpers and Towing Facilities

A. Bumpers

1. The bumpers shall wrap around the corners of the coach and be of a heavy-duty wide channel design.
2. The bumpers and their mountings shall provide impact protection to the coach from a 4,000 pound, post - 1973 automobile in a 2 mph parallel, or up to 30 degrees angle collision, relative to longitudinal axis.
3. The rear bumper extensions shall not protude to create a pedestrian snagging hazard.
4. The installation of the rear bumper shall include an anti-ride shield to prevent hitching of rides.

B. Towing Facilities

1. Provisions shall be made for attaching a rigid towing device on the front end of the bus.
2. The towing device shall withstand turning of the coach at its minimum turning radius with grades up to 6 percent and lifting both front wheels off the ground without causing permanent deformation to the towing device and coach.

3.29 - Wheelhousings

- A. Wheelhousings shall be of a sturdy construction of corrosion resistant steel or reinforced fiberglass capable of withstanding all types of normal abuse due to wheel pick-ups thrown against the underside causing abrasion, impact, corrosion, water absorption or other damage which affects the structural safety of the vehicle or passengers.
- B. The wheelhousing shall be trimmed and sealed at its mating edges.
- C. Ample clearance between the wheelhousings and front and rear tires shall exist under loaded conditions throughout complete turning range of coach and through full range of suspension travel.

SECTION 3 - BODY AND PAINTING (Continued)

3.29 - Wheelhousings (Continued)

D. The color of the wheelhousing shall complement the coach interior.

3.30 - Fenders and Splash Aprons

A. Fenders

1. Features to minimize water spray from the coach in wet conditions shall be included in wheelhousing design. Fender skirts shall be provided if required to minimize the wheel spray.
2. Fender skirts, if required, shall be flexible to permit clearance to remove tires.

B. Splash Aprons

1. Splash aprons, made of 1/4-inch composition or rubberized fabric, shall be installed on the rear of each wheelhousing, projecting downward to a point within three (3) inches of the ground. Aprons shall be of maximum width compatible with the wheelhousings.
2. Splash aprons shall be installed where necessary to protect filters, solenoids, relays and other equipment.

3.31 - Access Doors

- A. Access doors shall be provided and sized as required for the easy maintenance of equipment.
- B. Access doors shall be provided with positive hold open devices and corrosion resistant latches. Side access doors shall have flush type latches.
- C. Interior access doors shall blend in with the appearance of the coach interior.
- D. Access openings in the floor shall be avoided. Any access openings in the floor if required for maintenance shall be sealed to prevent entrance of fumes and shall not create a tripping hazard and shall require the review of the Engineer.

3.32 - Front Ventilators

An operator's ventilator installed in the front dash panel of the bus shall be weatherproof, adjustable and of sufficient size to provide ample ventilation at the operator's position. The opening shall have a corrosion-resistant screen. The adjustment of this ventilator shall be easy to operate and accessible to the operator. The ventilator door shall not protrude beyond the bumper when fully opened, and hinges with

SECTION 3 - BODY AND PAINTING (Continued)

3.32 - Front Ventilators (Continued)

graphite-impregnated phenolic or nylon bushings shall be attached with rivets or screws rather than welded. The ventilator shall be designed so that the door may be closed or opened from outside of bus without damage to the adjustment mechanism.

3.33 - Painting, Decals and Undercoating

A. Painting

1. The spray system of painting shall be used for interior and exterior of the bus. Exterior and interior paint shall be DuPont Centari acrylic enamel or equal. Interior shall be full gloss, except as noted in Sub-section A(2), which shall be flat finish. All paint applications shall be in accordance with procedure as recommended by the paint manufacturer. The colors shall be as follows:
 - a) The exterior colors shall match DuPont paint colors. The roof shall be painted No. 99058. The body shall be painted No. BP015 and NO. BP016; the wheels, hubs and rims shall be painted No. BP016.
 - b) The interior colors shall match DuPont paint colors. All of the interior painted areas shall be glossy hue No. 57811, except the top of the dash, the windshield frame, the inside of the front doors, front door posts, and the operator's window area which shall be dead flat, non-reflective No. 864-AF376 safety sheen acrylic lacquer. The color of the air-conditioning equipment visible in the interior shall be compatible with interior color scheme and shall be acceptable to the Engineer.
 - c) The above color area descriptions are general and painting details shall be agreed-on between the Engineer and the successful Bidder.
2. The Bidder shall submit to the Engineer the general procedure for preparing all metal before assembling in bus framework. The general procedures shall cover priming of welds, concealed aluminum and steel, and contact points of dissimilar metals.

B. Decals

The CTA will furnish to the Builder decals, lettering, monograms, metal signs and inside numbering, and ready-cut paper masks for painting numbers on the exterior of the bus. Location of all decals and numbers shall be selected by the Engineer. All decals, except pressure-sensitive type, shall be sealed around the edges or varnished over after application.

C. Undercoating

Underneath portion of the underframe, flooring and stepwells, including the underside of the wheel housings, and all copper tubing, shall be generously sprayed with fire-retardant Ashland Oil and Refining Company Tectyl No. 506 G undercoating material. Parts and section which should not be undercoated shall be adequately masked. Extreme care shall be exercised to keep all paint and underfloor coating from lubrication fittings and all mechanical operating devices so as not to interfere with their proper operation and lubrication. In order to aid in preventing the undercoating from getting onto moving parts, they shall be lubricated prior to undercoat spraying.

3.34 - Fare Box Mounting

The Builder shall provide a 1/8-inch thick steel plate, of sufficient size, as additional bracing and/or stiffening of the floor adjacent to the operator's platform in order to provide a rigid mounting area for a fare box pedestal. The location of the fare box shall be selected so as not to interfere with maintenance of any components. Size and location of plate shall be proved satisfactory to the Engineer. The Builder shall drill holes for the mounting and wiring of the standard fare box. Location and size of the holes shall be chosen by the Engineer.

3.35 - Operator's Coat Hook, Transfer Box and Accessories

- A. An acceptable operator's coat hook shall be furnished and installed by the Builder at the operator's platform area, at a location to be selected by the Engineer.
- B. A transfer box, CTA Drawing No. E1-511, Page DR-7 shall be furnished and installed by the Builder, location to be selected by the Engineer.
- C. A trash bag, CTA Drawing No. S1-559, Page DR-8, shall be furnished and installed by the Builder at a location to be selected by the Engineer.

3.36 - Run Number Sign Box and Curtain

- A. A hinged illuminated run number sign box, Transign Company No. D-5567, shall be provided. The sign box shall have four (4) individually controlled number and roller curtains. The run number box shall be mounted to permit minimum amount of obstruction to defrosting of windshield and allow maximum operator's view of passengers crossing in close proximity to the front of the bus. Installation and location shall require the concurrence of the Engineer.

SECTION 3 - BODY AND PAINTING (Continued)

3.36 - Run Number Sign Box and Curtain (Continued)

- B. The four-curtain readings shall be as CTA Drawing No. E1-513, Page DR-6. Curtain shall be illuminated with a 2 cp, 12-volt lamp in back of each curtain, and shall be designed to prevent the emission of light streaks between the curtain openings. Circuit shall be wired to master switch. The four (4) openings in the sign box shall be covered with Swedlow - Acrivue transparent plastic material. There shall be knife connectors, Aircraft Marine Products No 31943, or equal, in the wiring below the dashboard. The exposed leads on the dash shall be a two conductor cable.

3.37 - Special Events Sign Brackets

- A. A special events sign bracket shall be provided on the front of the bus at a location to be selected by the Engineer. The bracket shall be made as described on CTA Drawing No. E1-506, Page DR-4.
- B. A special events sign box shall be installed at the interior front of the bus. Sign box shall be of roller curtain design, design and location of box shall be submitted for the review and concurrence of the Engineer.

SECTION 4 - BRAKES AND AIR SYSTEM

A. Service Brakes

1. The service brake system may be either of a power hydraulic or air or combination system design. The system shall conform to required Federal Motor Vehicle Safety Standards.
2. The total braking effort shall be distributed between front and rear wheels in such a ratio as to ensure maximum tire mileage and equal rate of wear on front and rear brake linings.
3. Power hydraulic brakes on the front axle shall be disc type and be of a minimum dimension of 14.25 inches x 1.5 inches and on the rear axle shall be expanding shoe type of minimum dimension of 15 inches x 4 inches.
4. The brakes shall be self-adjusting. The friction material shall be of heavy duty design to give maximum life.
5. Routing of brake lines shall be such as to minimize the likely incidence of corrosion from road salt or other chemicals or susceptible to road hazards.
6. The Builder shall check the maximum braking efficiency, at weight with a full complement of fuel, oil and water and without passenger load with a Tapley decelerometer to ensure proper braking efficiency.
7. The hydraulic brake fluid reservoir master cylinder shall be easily accessible for servicing without removing any other equipment.
8. A warning light shall indicate when the loss of hydraulic pressure within the front or rear brake systems occurs.
9. The brakes shall be free of objectionable noise or squeal when applied.
10. The braking system shall require the review and concurrence of the Engineer.

B. Parking Brake

1. Each coach shall be equipped with a parking and emergency brake that is independent of the service brakes.
2. The parking brake shall be of the lever type and be located within the easy reach of the driver.
3. The parking brake when applied with the bus running, shall illuminate an indicator light on the instrument panel.

SECTION 4 - BRAKES AND AIR SYSTEM (Continued)

C. Air System

1. An air compressor shall be provided to supply air pressure for door operation.
2. An air reservoir of sufficient capacity to provide repeated operation of the door shall have a manual and acceptable automatic moisture ejection device.
3. Air lines to equipment shall be equipped with a filter.

SECTION 5 - RESERVED FOR USE IN FUTURE SPECIFICATIONS.

SECTION 6 - COOLING

Radiator shall be of the heavy duty tube type of a sufficient size to properly cool the engine in heavy service.

The radiator fan shall be thermostatically controlled.

The cooling system temperature control shall maintain an engine coolant temperature to provide good bus interior heat, minimize oil sludging and ensure long engine life, under weather and operating conditions encountered in Chicago Transit Authority operation.

A corrosion resistant coolant surge tank shall be provided to store and restore expelled coolant.

The coolant in these buses shall be protected from freezing with ethylene glycol antifreeze installed to protect the coolant to ten (10) degrees below zero Fahrenheit or lower.

Low points in the cooling system shall be equipped with drain cocks or plugs.

The cooling system shall be equipped with an automatic pressure relief cap. The cooling system shall be designed to withstand operating pressures without leaking and be protected to prevent extreme pressure build-up.

Adequate access shall be provided for inspection and filling of the cooling system from outside vehicle without removing any other equipment.

Hose clamps shall be 1/2 or 9/16-inch wide, stainless steel, worm type, with screwdriver tightened collar.

SECTION 7 - ELECTRICAL

7.01 - All exterior and interior lighting shall comply with all applicable State and Federal requirements.

7.02 - Interior Lighting

- A. Fluorescent lighting shall be installed along total length of coach from behind driver's area rearward.
- B. The lighting intensity for all seat and wheelchair positions shall have an overall minimum average of 25 foot-candles with a minimum of 15 foot-candles at the passenger reading plane, that plane being 33 inches above the floor and on a 45 degrees angle. The aisle and entrance area shall have a minimum of 10 foot-candles of lighting intensity.
- C. Lighting lenses shall be made of polycarbonate material and be sealed to prevent the entrance of dust and insects but shall be easily openable for cleaning and service of ballast and fluorescent lamp.
- D. The Builder shall furnish a plan showing proposed lighting levels, location of lighting fixtures and power supply for approval.
- E. Interior lights shall be operative without the engine running.
- F. The power for fluorescent lighting shall be of the individual lamp ballast type. Power ballast shall be inaudible.

7.03 - Stepwell and Curb Lights

- A. The front stepwell area shall be illuminated to a minimum of five (5) foot-candles. Ground surface for a distance of three (3) feet from bottom step edge outward in all directions shall be illuminated to a minimum level of two (2) foot-candles.
- B. The stepwell and curb light shall be activated when the front door is open while the engine is running.
- C. Stepwell lights shall be shielded to prevent light from directly shining into passengers' or driver's eyes.

7.04 - Driver's Lighting and Spotlight

- A. The driver's area shall have a ceiling mounted light to provide illumination in the steering wheel area to a level of ten (10) to fifteen (15) foot-candles. Light shall be controlled by its own switch.
- B. A driver controllable spotlight capable of producing illumination 90 feet from bus shall be provided.

7.05 - Marker Lights

- A. Four, 4cp, 12-volt marker lights shall be installed, one on each upper corner of the body. The two front fixtures shall have amber colored lenses and the two rear fixtures shall have red colored lenses.

SECTION 7 - ELECTRICAL (Continued)

7.05 - Marker Lights (Continued)

- B. Fixtures shall be flush with or inside of the side body line to prevent damage to the fixtures or lenses when running the vehicle through an automatic bus washer.

7.06 Clearance Marker Lights

Three light fixtures shall be mounted on 6-inch centers, near the top of the roof and centered on the body center line, on the front of the bus with amber lenses and on the rear of the bus with red lenses.

7.07 Directional, Stop and Back-up Lights

- A. Flashing type directional lights shall be installed at front, rear and sides of the bus body sufficiently protected so as not to be damaged by the automatic bus washer. Two front fixtures shall have 32 cp lamps and amber lenses. Two or four rear fixtures shall be a combination or separate stop and directional lights with 32 cp lamps and red lenses of 6-inch minimum diameter. Four side directional lights, mounted forward of the respective front and rear wheel housings shall be equipped with a guard, with amber lenses and 32 cp lamps. All lamps shall be 12 volts. Locations shall be acceptable to the Engineer.

- B. Directional light switch of the heavy duty lever type shall be securely mounted in the steering column on the left side with adequate clearance between steering wheel and switch handle. Directional switch shall be equipped with an automatic return to "off" when turn is completed. Two flashing indicator lamps, one each for right or left turn, shall be mounted on the instrument panel to inform operator when either set of directional lights is in operation.

- C. A distress signal toggle switch shall be provided to simultaneously flash the eight directional lights at the front, rear and sides of the bus. This distress signal toggle switch shall overrule the manual directional switch on the steering column.

The distress signal toggle switch shall be located on the driver's control panel, and a location acceptable to the Engineer. The indicator lamps on the dash shall flash when distress signals are flashing.

- D. Flasher relay for the directional and distress signal lights shall be easily accessible and readily replaceable.
- E. The rear stoplights shall be illuminated whenever the brakes are applied.
- F. Two back-up lights of minimum 4" diameter shall be installed on the rear of the bus.

SECTION 7 - ELECTRICAL (Continued)

7.08 - Headlights

- A. The bus shall be equipped with either single or dual heavy duty, 12-volt, sealed beam, automotive type headlights.
- B. Headlights shall be mounted approximately 40 inches above the ground. Headlights shall have mechanical, horizontal and vertical adjustments.
- C. Headlights shall have tilt-ray features which shall be controlled by a foot button dimming switch located convenient to the operator's left foot.
- D. A headlight high beam indicator shall be installed on the instrument panel.

7.09 - Taillight and License Plate Light

- A. Two taillights shall be of minimum 6-inch diameter with red lens and 4 cp lamps.
- B. License plate holders shall be installed on the front and rear of the bus. A license plate lamp shall be used to illuminate the license plate on the rear of the bus. This lamp shall be wired to the headlight circuit.

7.10 - Reflectors

Amber colored reflectors shall be mounted on the front of the body near the lower left and right corners. Red colored reflectors shall be installed on the rear of the body not more than twelve (12) inches from the lower left and right corners. Reflectors shall be installed in accordance with "The Illinois Vehicle Code", Section 12-202 as amended by Public Act 78-501, and any other applicable regulatory requirement.

7.11 - Instrument Panel and Control

- A. There shall be a dust proof instrument panel at the operator's position which shall contain the following devices and signals:
 - 1. Red or blue signal light to indicate headlight high beam is on.
 - 2. Red signal light to indicate when the generator is not charging the battery.
 - 3. Green signal lights to indicate when the turn indicator is on or emergency flasher is on, one for right and left sides.
 - 4. Red signal light to indicate low oil pressure.
 - 5. Red signal light to indicate high water temperature.

A. (Continued)

6. Red signal light or lights to indicate parking brake is applied and/or brake interlock is applied.
7. Fuel tank level gauge.
8. Speedometer with recording odometer.
9. A red indicator light to indicate loss of either front or rear brake pressure.
10. A red indicator light to indicate low air pressure.

The signal lamps shall be individually operated so as to indicate each particular condition. All signal lamps shall be wired so that they will not be energized when the bus is off except turn signal and door signal lights.

In addition to the signal lamps, the high water temperature and low oil sending devices, shall be connected to an alarm buzzer so that when the lamps are energized the alarm buzzer will sound.

- B. Design of the instrument panel, identification marking, signal lamps and buzzers, and the associated sending units shall be of heavy duty type and shall require the review and concurrence of the Engineer. All indicators and switches shall be plainly and permanently marked. The dash panel shall be so designed that it may be swung down or up, or lifted, without disconnecting the indicating devices and shall provide easy access to all indicators and switches. The panel shall be shunted, if necessary, to ensure electrical ground return and designed so as to prevent rain, or water used for cleaning interior of vehicle, from running into the indicators. A light cluster shield shall be installed, if necessary, to shield the indicator lenses from the sun in order to improve daytime visibility of signal lights.
- C. Start control shall be with either a key start or pushbutton start with key switch disconnect. Keys for all vehicles shall be the same. Two spare keys per coach shall be supplied.
- D. All switches of the individually mounted type shall have their capacity, both current and voltage, plainly and permanently marked on them or if not marked, all switches must be of the same capacity.

Switches shall be mounted in a conveniently located grouping to the driver's left and shall include:

1. Switch for interior lighting.
2. Switch for front heating and defrosting unit.
3. Switch for passengers area heating and air-conditioning unit.
4. Emergency shut-down switch if vehicle is equipped with diesel engine.
5. Hazard warning switch.
6. Switch for driver's light.

SECTION 7 - ELECTRICAL (Continued)

7.11 Instrument Panel and Control (Continued)

- E. A single master run switch shall be furnished. The switch shall have five (5) positions to energize individual circuits as follows:

	<u>Engine Stop</u>	<u>Day Park</u>	<u>Run</u>	<u>Lights</u>	<u>Clearance and Iden- tification Lamps</u>
Starting Circuit	-	-	X	X	-
Signals and Alarms	-	-	X	X	-
Charging Circuit	-	-	X	X	-
Speedometer	-	-	X	X	-
Heating & Ventilation	-	-	X	X	-
Fast Idle (if so equipped)	-	-	X	X	-
Headlights	-	-	-	X	-
Taillights	-	-	-	X	X
Marker & Michigan Lights	-	-	-	X	X
Interior Fluorescent Light	-	-	-	X	X
Panel Lights	-	-	-	X	X
Front Destination Fluorescent Light	-	-	-	X	X
Run Number Sign	-	-	-	X	X
License Plate	-	-	-	X	X
Door Step Light	-	-	-	X	X
Fare Box Light	-	-	X	X	-
Radio Circuit	-	X	X	X	X

- F. The horn, emergency flashers, door master switch and engine emergency shutdown switch (if vehicle is equipped with diesel engine) shall be energized directly through the battery bus bar.

A provision shall be made to turn off the interior fluorescent lights in the "Lights" or "Clearance and Identification Lamps" position by a dash mounted toggle switch. The front destination sign light shall be controlled only by the master switch.

7.12 - Passenger's Stop Signal

- A. Passenger's stop signal switches, Cole-Hersee No. 40100 or Delco-Remy No. 1998723, or equal, shall be mounted on vertical surfaces, and in such a manner as to prevent entry of moisture and shall be operated with pull cords.

SECTION 7 - ELECTRICAL (Continued)

7.12 - Passenger's Stop Signal (Continued)

A. (Continued)

Cords shall be wire center, vinyl covered, Danco, 6D, clear vinyl, Apex No. 585, or equal. The cords shall be mounted along the length of the bus on both sides of the body as per Builder's standard practice. Eyelets shall be chrome plated cast brass, Rostand Manufacturing Company, No. 2221 or No. 2223, or equal.

The signal device shall be a single tone solenoid type chime acceptable to the Engineer.

- B. A red sign with the word "STOP REQUESTED" printed in white letters visible to both the driver and passengers shall illuminate when the passenger chime is activated, and remain on until the door is opened. The chime will sound when the light is first illuminated but will deactivate thereafter while the light is on. The signal reading shall be visible only when the sign is illuminated after activation. The location and design of the sign shall require the concurrence of the Engineer.

7.13 - Horn

- A. Dual heavy duty, 12-volt horns shall be furnished and installed so as to be protected from wheel wash.
- B. The horn shall be operated by a button in the center of the steering wheel.
- C. The horn pitch shall be easily distinguishable from a regular automobile and truck horn.

7.14 - Batteries

The Builder will furnish a minimum of one lead-acid, 12-volt, battery per bus. Batteries shall be heavy duty lead-acid type, minimum 200-amp-hr. capacity, SAE figure 20-cell layout with cast lead terminal post extensions over the end with 3/8-inch cable terminal studs for hexagon nuts, and shall meet the requirements of SAE J537h. The batteries shall not have handles but must have provisions to be lifted with tongs that are satisfactory to the Engineer. The batteries shall be Exide DM-8D or Delco 8DR205, or equal, and shall have individual cell covers; one-piece covers are not acceptable. The specific gravity of a full charged battery shall be nominal 1.260 when bus is ready for delivery.

7.15 - Battery Cables

Battery cables shall be extra flexible type electric welding stranded copper cable, high temperature resistant neoprene sheath. Cable sizes shall be reviewed by the Engineer. Cable shall not lie on top of battery. Cable terminals shall be soldered to the cables, and the cables shall be of ample length to slide the battery tray out for watering and cleaning the battery. Battery positive cable terminal shall be painted red. Battery cables in the engine compartment shall be no smaller than 4/0 AWG.

SECTION 7 - ELECTRICAL (Continued)

7.16 - Battery Box and Tray

- A. The battery box and an open bottomed tray shall be designed to hold battery measuring 11-1/4 inches wide, 20 inches long and 11 inches high. The battery box shall be located away from the engine compartment or be sufficiently ventilated to dispose of any damaging heat and be protected from wheel spray and dirt accumulation. There shall be provision to drain any electrolyte without damage to piping or equipment. Battery tray shall be of sturdy design with two equally spaced supporting straps across the open bottom. The design and material of the battery box and tray shall require the approval of the Engineer. The tray shall be readily removable with provision for lubrication of the rollers and the lift-handle shaft; and shall have battery hold-down clamps, and a locking device to keep tray from sliding out accidentally. An approved type spacer shall be used between battery case and battery tray to keep battery from shifting. A means of eliminating vertical movement of tray when it is locked in position must be provided.
- B. Battery tray shall extend beyond body sufficiently to allow filling of battery with automatic battery water filler bottle.
- C. Inside surfaces of box and tray rigging and supports shall be painted with asphaltic protective coating, special battery paint.

7.17 - Generator and Regulator

- A. The electrical system shall have a 12-volt, minimum 130 amp alternator.
- B. Voltage regulator shall be a solid state type. Voltage regulator shall be readily accessible for adjustment, located in a clean, dry and ventilated area and protected so that passengers cannot come into contact with it.
- C. The Builder shall furnish for review by the Engineer, a breakdown of the total possible power demand of the electrical system.

7.18 - Starter

- A. The starting system shall be 12-volt direct current.
- B. The starter shall be capable of turning the engine over under all climate conditions encountered in Chicago Transit Authority operation.
- C. The starter shall be protected against engagement during engine operation.

SECTION 7 - ELECTRICAL (Continued)

7.19 - Cables and Wiring

- A. Wires shall comply with SAE Specifications, and be of sufficient size to carry the required current without excessive voltage drop. All wires shall be continuous color coded and/or otherwise number identified and installed in conduit or flexible tubing and the flexible tubing shall be vinyl type Varflex BT, or equal. All wiring shall be adequately protected from water solvents, chafing and exterior elements. Number identification of the wires shall require the approval of the Engineer.
- B. All wires shall be of sufficient length to provide a loop at terminals so as to permit ample slack for directional positioning. General and Engine compartment wiring shall comply with SAE Standard J558a for general purpose thermoplastic Braidless type or approved equal. Two extra wires shall be included in the wiring harnesses over five (5) feet in length.
- C. All wires and cables subject to extreme heat shall have silicone insulation with 2-ply glass braid outer covering and further protected by shields, where necessary, to prevent premature failure.
- D. No "T" splices shall be made in wiring unless concurred with the Engineer. All wiring shall terminate at appropriate junction terminals.
- E. Grounding shall not be through hinged doors or any other cover.
- F. The Builder shall furnish to the Engineer complete wire diagrams with wire sizes, maximum normal current flow in each wire, type of insulation and code used. General wiring and wiring of accessories shall be required to be reviewed by the Engineer.
- G. All exposed wiring visible in the coach interior shall require additional protective insulation acceptable to the Engineer.
- H. Circuit breakers shall protect the circuits. Circuit breakers shall be plainly identified, fuses if used shall be placed in a single block and shall require the consent of the Engineer.
- I. All wiring end connectors shall be of the soldered insulated or machine staked type.

7.20 - Fare Box Wiring

Wiring for fare box circuit shall be of two No. 14 insulated wires in vinyl tubing, to terminal block under floor; one energized directly from a battery positive feed protective circuit breaker, and the other to ground.

SECTION 8 - ENGINE

8.01 - General

- A. Bids will be taken for both a diesel and gasoline engine equipped bus.
- B. The engine shall be capable of giving satisfactory life and performance in local transportation service under the conditions which prevail in the Chicago Transit Authority operation.
- C. The Builder shall furnish details of the gasoline and diesel engine including performance curves for review and concurrence of the Engineer.
- D. Gases, solids and sound levels originating in, produced by and emitted from the propulsion engine and/or auxiliaries shall not be greater than such effects permitted by any Federal, State or Local government regulations.
- E. Objectionable odors shall not be emitted.
- F. The engine mounting shall be sufficient to carry the loads imposed upon it during operation.
- G. The engine cradle shall not interfere with the removal of engine accessories.
- H. The power plant assembly shall be mountable and de-mountable as a complete assembly.
- I. The engine crankcase fill shall be only by a quick-disconnect 3/8-inch coupler plug, Hansen Part No. 3-K21 or equal, located in an easily accessible location from outside vehicle.
- J. The crankcase dipstick shall be located in the general area of the crankcase filler and shall be in an easily accessible location from outside vehicle.

8.02 - Diesel Engine

The following additional requirement shall be for the diesel engine:

- 1. Fuel injectors shall be of the latest design to reduce objectionable engine emissions and provide the best performance.
- 2. The engine shall be equipped with a tachometer adapter which is readily accessible.
- 3. An engine fast idle device shall be solenoid or air operated and controlled by a switch mounted on the dash accessible to the operator. Fast idle device shall be designed to operate only when the shift lever is in the neutral position and shall not be overruled by the accelerator interlock. Fast idle device shall have a setting of 825 RPM $\pm$ 50 RPM with air-conditioning on.

SECTION 8 - ENGINE (Continued)

8.02 - Diesel Engine (Continued)

4. Brass hexagon head plugs, with standard pipe threads, for vacuum and pressure gauge connections shall be installed in, or as near as possible to, the air intake and exhaust manifolds in a readily accessible location.
5. The engine shall have the necessary crankcase ventilation to eliminate excessive crankcase back-pressures when air box pressures are within allowable engine tolerance.
6. The engine governor shall be set to limit maximum bus speed to between 50 to 55 mph.
7. Positive emergency stop shall be provided. Switch shall be provided for emergency shut-off at the driver's position. Switch shall be protected to prevent accidental engagement.

8.03 - Gasoline Engine

The following additional requirements shall be complied with for the gasoline engine:

1. Engine shall be heavy duty with a minimum displacement of 440 cubic inches.
2. Engine shall be equipped with a solid state electronic ignition system.
3. Secondary engine wiring shall be of the best type available to provide long lasting service.
4. Spark plugs shall be readily accessible and easily removable.
5. Engine must be capable of burning unleaded fuel.

8.04 - Oil Filters

- A. A large capacity oil filter shall be installed.
- B. With a diesel engine, an additional by-pass type filter shall be installed.
- C. Filters shall be easily replaceable.

8.05 - Water Pump

The water pump shall have sufficient discharge capacity to maintain proper engine temperature.

SECTION 8 - ENGINE (Continued)

8.06 - Mufflers and Tail Pipes

- A. The exhaust muffler shall be heavy-plate type designed with proper acoustical qualities and tailored to the engine requirements and installation.
- B. The exhaust and tail pipes shall be so designed to provide sufficient clearance from the running gear under all operating conditions. No part of the exhaust system shall foul with the axle, or any part of the bus when the bus body is raised on the jacking pads.
- C. The muffler and tail pipe shall be installed so as to allow easy access to engine accessories and to avoid damage to engine appurtenances due to excessive heat.
- D. The tail pipe shall exhaust at the lower left rear corner of the bus with exhaust directed downward to center of street.
- E. The tail pipe plenum shall be completely sealed and insulated to prevent fumes or smoke from entering the bus interior, and to prevent excessive heat from causing a burn or fire hazard.

SECTION 9 - COMMUNICATIONS' SYSTEMS

9.01 - Radio Compartment

A waterproof compartment shall be provided for a two-way radio transceiver. This compartment will be located in the driver's area.

The radio compartment depending on bus design may be located under the floor.

Design of radio compartment shall require the concurrence of the Engineer.

9.02 - Antenna Access Panel

An antenna access panel shall be installed in the ceiling of each bus, and be located at a point on center line of bus and four (4) feet from front of bus. This access panel should be located as close to a roof structural member as practical in order to provide a mounting base for a radio antenna.

A metallic or plastic conduit with an inside diameter of not less than 1-inch shall be installed and run from the ceiling antenna access panel through the bus wall to the main power panel. A section of this 1-inch diameter conduit shall run from the main power panel to the radio compartment, and from the power panel to underneath the instrument panel.

This conduit will provide for future installation of coaxial antenna and circuit control cables by the "pull through" method. A pull through wire shall be placed in each of these conduit runs.

The physical location and length of these conduit runs shall require the concurrence of the Engineer.

9.03 - Radio Compartment Power Supply

Mounted inside this compartment shall be a 8-stud block and to one of the terminal sets on this block shall be attached a 12-volt, 30-amp capacity circuit with ground wire, protected by 30-amp circuit breaker located in main circuit breaker panel. Both the hot side and ground side wires shall be not less than No. 10 stranded.

The radio power supply circuit shall be electronically protected in the event of a reverse current flow.

SECTION 10 - RESERVED FOR USE IN FUTURE SPECIFICATIONS

SECTION 11 - RESERVED FOR USE IN FUTURE SPECIFICATIONS

SECTION 12 - FUEL SYSTEM

12.01 - Fuel Pump

The fuel pump shall be mechanically actuated and of sufficient capacity to supply the fuel injectors or carburetor with sufficient fuel to operate the engine under normal operating conditions. Accessibility of the fuel pump shall require review of the Engineer.

12.02 - Fuel Tank

- A. The fuel tank shall have a usable capacity of at least 50 gallons. The tank filler pipe shall be on the right side of the bus and so designed as to permit a minimum filling rate of 40 gallons per minute filling to the "full" point with no back splash when fuel fill nozzle shuts off, using Standard CTA nozzle. A vent alarm shall not be installed. Fuel tank construction and installation shall require the review and concurrence of the Engineer.
- B. The fuel tank shall be made of sufficiently heavy gauge material internally to prevent baffled surging and shall be properly treated to minimize rusting or oxidizing during the life of the vehicle. The tank shall be internally braced and externally supported in such a manner as to eliminate the possibility of developing vibration fatigue cracks. All openings shall have adequate stiffeners so that a flat surface is presented to the attaching plates.
- C. The fuel tank shall have a sump directly under the pump inlet pipe. This sump shall have a minimum of 3/8-inch standard pipe thread plug opening for a periodic draining of water and sediment from tank. The drain plug shall be brass with hexagon head.
- D. Fuel tank shall be removable for replacement and repair.
- E. Fuel filler cap shall be hinged and spring loaded.
- F. A metal plate shall be installed stating the appropriate fuel to be used, lettering shall be a permanent type.

12.03 - Fuel Filter

- A. A fuel filter with replaceable type element shall be installed and shall be readily replaceable.
- B. With a diesel engine a primary and secondary filter with renewable type elements shall be installed. A check valve shall be provided to prevent syphoning of fuel back to tank.
- C. Fuel filters shall require the review of the Engineer.

SECTION 12 - FUEL SYSTEM (Continued)

12.04 - Air Cleaner

- A. A heavy duty dry replaceable element type air cleaner shall be provided of sufficient capacity to adequately clean the air and not abnormally restrict the air flow.
- B. The design of the air filter and air duct shall be designed to prevent the entrance of water into the air induction system.
- C. Style, installation and ease of removal of the elements shall require the review and concurrence of the Engineer.

SECTION 13 - LUBRICATION

- A. A lubrication list will be provided to the successful Bidder indicating Chicago Transit Authority standard lubricants. If any Manufacturer uses any lubricants which shall not be compatible with the Chicago Transit Authority lubricants, the Builder shall immediately notify the Engineer of any deviation, and such lubricants shall require the permission of the Engineer.
- B. All lubrication fittings shall be masked in order to keep them free from paint and undercoating. Fittings shall be located so as to be conveniently reached from a pit and/or hoist. All Zerk fittings shall be of the threaded type without using special adapters.

SECTION 14 - SUSPENSION SYSTEM

- A. Suspension system shall be of the proper design and capacity to provide quiet operation, long life and maintain correct wheel geometry. Suspension system, including shock absorbers, shall require the review and concurrence of the Engineer.

Heavy duty multi-leaf spring suspension and sway bar on the front and rear shall be provided. Leaf springs shall have teflon silencer inserts.

- B. Whenever "U" bolts are used to fasten the axle to the suspension system, an approved plate shall be placed between the axle and the spring unit to keep the bolts and axle from shifting. "U" bolts shall be a high grade alloy steel and nuts shall be at the bottom of the axle so as to be accessible without removal of wheels and shall be double nutted with high quality heat-treated nuts or held by an approved locking device.
- C. Each wearing surface of the suspension which requires lubrication shall have individual grease fittings, i.e., no parallel grease paths to be used. All grease fittings subject to direct wheel spray shall be protected by heavy rubberized fabric shields.
- D. Bumper stops at front and rear axles shall be properly aligned, and of correct dimensions and strength to prevent damage to body, underframe, equipment or running gear.
- E. Builder shall provide heavy duty shock absorber of the proper design to provide good ride characteristics and handling.

SECTION 15 - RESERVED FOR USE IN FUTURE SPECIFICATIONS.

SECTION 16 - POWER STEERING

- A. Power steering shall be supplied. The force at perimeter of steering wheel applied by the driver shall not exceed ten (10) pounds with the vehicle moving at 1 foot per second. Loss of power steering shall not result in loss of steering control. The complete design and application details shall be submitted to the Engineer for review and concurrence.
- B. Wheel geometry and steering arrangement shall be such as to ensure easy steering and to promote correct tire wear. The steering column-to-dash mounting shall be such as to prevent pre-loading or stressing of the steering column. Mounting shall be such as to make the wheel free from road shocks and vibration. The steering wheel shall be of black plastic, 22 inches in diameter. The mounting of the column in relation to operator's seat and pedal arrangement shall require the concurrence of the Engineer.
- C. Steering gear, rotating shaft universal joints and splines shall be protected from wheel spray. Steering shaft, yoke and clamping shall be so designed as to assure positive clamping of the yoke on the shaft. All steering shaft crosses shall have needle bearings. All parts shall be easily removable for replacement or repair, and shall require the approval of the Engineer. All timing marks, that are necessary for the correct alignment shall be installed.
- D. A power steering fluid reservoir which is easily accessible without removing any equipment shall be provided with filter element, and screen and shall have a dipstick properly marked to check fluid level.

SECTION 17 - TRANSMISSION

- A. The transmission shall be properly mated with the engine furnished. Controls and internal parts shall be adequately designed and adjusted to provide smooth power shift accelerations without damage, and to prevent output torque when the selector lever is in neutral position. Transmission shall require the review and concurrence of the Engineer.
- B. The transmission shall be fully automatic power shift, hydraulic drive, heavy duty type.
- C. The selector lever shall be conveniently located to the satisfaction of the Engineer.
- D. Transmission shall be interlocked with starter motor to prevent engagement of starter in any gear position other than neutral or park.
- E. Transmission shall be equipped with a oil filter which is readily replaceable.
- F. Adequate transmission fluid cooling shall be provided for heavy load operation.
- G. A conveniently located filter and dipstick tube for checking and filling the transmission shall be provided.

SECTION 18 - PROPELLER SHAFT

- A. Propeller shaft shall be heavy duty type with lubrication fittings provided for the universal joints.
- B. There shall be suitable protective hangers around the propeller shaft. Heat shield for propeller shaft universal joints shall be provided if necessary.
- C. All timing marks, that are necessary for the correct alignment shall be installed.

SECTION 19 - WHEELS AND TIRES

19.01 - Tires

- A. The Builder shall furnish each coach with six (6) steel belted, 8.00 x 19.5E 10-ply tires.
- B. Tire valve stems shall be so shaped that they will not contact brake drum. Valve stems shall be readily accessible for servicing of tires. Valve caps shall be of metal.
- C. Tires shall comply with all applicable regulatory standards.

19.02 - Wheels

- A. All wheels shall be of the ventilated type and shall be machined and balanced.
- B. Wheels shall be of a heavy-duty type minimum of 19.5" diameter and 6.0" width.
- C. All wheels on the bus shall be of the same size and type, interchangeable between front and rear.
- D. Each assembly of tire and wheel shall be balanced. All balancing weights shall be evenly distributed on both sides of the wheel.
- E. One extra wheel and tire assembly as used on the coach shall be furnished with each bus.

SECTION 20 - RESERVED FOR USE IN FUTURE SPECIFICATIONS.

SECTION 21 - RESERVED FOR USE IN FUTURE SPECIFICATIONS.

SECTION 22 - WHEELCHAIR DEVICES

22.01 - Wheelchair Lift

A. General

A wheelchair lift which when not in use forms the entrance and exit steps shall be provided to safely lift a wheelchair with a handicapped person from ground level to the coach floor level under all climate and operating conditions encountered in the Chicago Transit Authority operation between -20 degrees F. to 110 degrees F.

B. Dimensions and Capacity

The length and width of the lift platform and ramp to the lift platform shall be sized to allow a handicapped passenger to move his wheelchair into position on the platform with adequate maneuvering room.

The following minimum requirements shall be complied with:

Platform and ramp width minimum	36 inches
Platform depth minimum	42 inches
Ramp grade maximum	5 degrees
Lift capacity (excluding weight of lift) minimum	700 pounds
Height clearance with lift in raised position	67 inches

C. Construction

1. The lift shall be of a durable heavy duty construction. All materials shall be corrosion resistant.
2. The lift when in the step configuration shall form a rigid two-step configuration. Depth of step tread shall be at least twelve (12) inches. Height of step risers shall be a maximum of eight (8) inches. Risers from first step to second step and from second step to floor platform shall be of the same dimension. In the step configuration, all tripping hazards shall be avoided.

The step configuration shall be rigidly supported and stored to comply with maximum bottom step height specification as per Section 3.01 regardless of door position. Loss of hydraulic fluid shall not affect step configuration when lift is this mode. The stepwell area around the lift shall be adequately sealed to prevent entrance of contaminants from exterior and loss of heated or cooled interior air.

3. The sides of the stepwell area shall be of a durable, weather-resistant, non-scuffing material designed to match coach interior.

SECTION 22 - WHEELCHAIR DEVICES (Continued)

22.01 - Wheelchair Lift (Continued)

4. Step tread covering shall be black, 5/16-inch, non-skid, composition material with ribbing running perpendicular to step riser. Integral nosing on steps shall be yellow. Hypalon rubber composition material, or equal, three (3) inches deep and full width of step tread.
5. A mechanical holding device shall be provided in the lift design to hold the wheelchair with passenger in place as it is being raised or lowered. The mechanical holding device shall be automatically applied or the lift shall be interlocked to insure that while the wheelchair is on the lift in a raised position, securement will be provided.
6. All operating components, joints, linkage and mounting points to the body shall be adequately sized for the loading capacity.
7. The bearings and all friction points shall be located to be easily lubricated.
8. Protruding parts on edges of the lift mechanism shall be avoided. Any coach interior parts which may interfere with the lifted passenger shall be padded.
9. Interfacing surfaces to lift platform and bus floor must be so designed as to prevent injury during lift operation to appendages which might protrude beyond platform and under bus floor.

D. Operation

The lift operating mechanism shall be capable of providing smooth jerk free ride in both the up and down direction.

The total cycle time from step configuration through the lift operation back to the step configuration with the maximum design load in the design temperature range shall be a maximum 45 seconds. The timing shall be such to avoid excessive speed during any phase of the operation.

E. Operating Mechanism

1. The lift shall be hydraulically operated.
2. The hydraulic and electrical system shall be of adequate size to meet performance requirements.
3. The hydraulic reservoir shall be of adequate capacity and shall have a provision for checking fluid level without removing any equipment. The system shall be equipped with a monitoring device to check fluid level.
4. The operating components and fluid reservoir shall be readily accessible for maintenance and repair.

SECTION 22 - WHEELCHAIR DEVICES (Continued)

22.01 - Wheelchair Lift (Continued)

E. Operating Mechanism (Continued)

5. The operating components shall not emit any objectionable noise. Interior noise levels as defined in the General Specification shall be complied with.
6. Provision shall be made in case of loss of power or failure of one of the power cylinders to protect the driver or passenger from injury.
7. The platform shall be capable of lowering 1.5 inches below the reference ground line, enabling it to be used in a peculiar condition where ground level might be lower than the area where the vehicle wheels are standing.
8. A heater shall be provided, if required, for the hydraulic fluid to ensure correct operation during low ambient conditions.

F. Control

1. The driver shall have complete control of the operation of the lift. However, lift control movement shall be interlocked through a passenger control button which, if depressed, will stop movement of the lift. The control button shall be usable by a wheelchair passenger riding on the lift.
2. The controls shall be located to the forward side of the stepwell but shall not be accessible to the wheelchair passenger.
3. Controls shall be provided to move ramp in and out, and to move lift up and down. Movement of lift shall occur only while control is held in activated lift position. To protect lift mechanism from scraping on ground, the lift control shall be interlocked to prevent in and out movement while lift is in the down position. Lift shall not be able to put into step configuration when a person is on the lift.
4. Controls shall be labeled.
5. Control shall be interlocked to be inoperative with the door closed. Control shall also be operable only with the vehicle in the neutral or park position.
6. The lift platform shall have a sensitive edge function to automatically stop mechanism when the lift touches the ground or accidentally contacts a person or object.
7. The lift shall automatically stop after the lifting operation at the floor level.

SECTION 22 - WHEELCHAIR DEVICES (Continued)

22.01 - Wheelchair Lift (Continued)

8. The lift shall automatically stop after the return to step operation when the proper step configuration is obtained.
 9. A switch shall be provided at the lift control to cut-off electrical power to the lift mechanism. Switch shall be labeled.
 10. The wheelchair securement device on lift shall be adequate to secure all types of wheelchair in the lift operation.
 11. Provision shall be made to manually operate lift in case of system failure.
 12. All switches used shall be heavy duty waterproof type.
- G. The wheelchair lift shall require the review and concurrence of the Engineer.

22.02 - Wheelchair Securement Device

- A. A wheelchair securement device shall be provided at each wheelchair location.
- B. Wheelchair securement device shall be designed to accommodate forward facing wheelchair and retain wheelchair with no forward, backward or lateral movement.
- C. The wheelchair securement device shall be readily removable by a mechanic yet be of adequate strength to securely hold wheelchair with 600 lb. load in crash conditions.
- D. Wheelchair securement device shall be attached to jump seat bottom.
- E. The securement device shall be readily adjustable to all types of wheelchairs.
- F. The mechanism shall not cause or have the potential of causing injury to the wheelchair occupant or damage to the wheelchair.
- G. Design of wheelchair securement device shall require the review and concurrence of the Engineer.

SECTION 23 - PARTS BOOK, DRAWINGS AND PHOTOGRAPHS

- A. The Builder shall furnish twenty (20) copies of the maintenance manual and twenty (20) copies of the parts book covering all items on the buses as built.
- B. In order to ensure accuracy when ordering parts, the Builder shall provide exploded - type sketches, drawings or photographs of the major components of the body, underframe, running gear and propulsion unit parts.
- C. The Builder shall furnish wiring schematics for all of the electrical equipment complete with color codes and wire numbers. In addition separate schematics for each of the respective wiring circuits such as lighting circuits, door control, etc., shall be supplied. Complete separation of circuits will involve approximately fifteen (15) pages.
- D. The Builder shall furnish one (1) copies of complete Bill of Material of all parts used in construction of the buses, including identification of all vendors or auxiliary equipment with vendor's identity, and models, type and part numbers.
- E. Builder shall furnish complete sets of layout and installation drawings, and other detail drawings which may be requested for use in maintenance of these vehicles.
- F. Builder shall furnish approximately 100 negatives of construction photographs taken, as directed by the Engineer, in various stages of progress before any interior trim or floor covering has been applied. The purpose of such photographs shall be for identification of electrical wiring, bus air piping and equipment unit installations which are photographically inaccessible after completion of construction.
- G. The Builder shall furnish forty (40) copies of operating instructions which may be used to instruct the operators. These instruction brochures shall explain the operation and location of the various units and switches available to operator's control and provide the information which an operator may use in the event of failure or improper functioning of various units.
- H. If the Contractor or Manufacturer will not supply the Chicago Transit Authority a particular drawing or drawings because they are considered "classified information", he shall so notify the Engineer, and in lieu of such prints, provide such information as will completely satisfy the Engineer that the vehicle will perform satisfactorily in Chicago Transit Authority service and ensure accuracy in ordering parts.
- I. Maintenance manuals parts books, drawings, sketches, photographs, wiring schematics, Bill of Material and operating manuals shall be furnished before delivery of the first bus. This material shall be addressed to:

Chicago Transit Authority
Attention: Superintendent
Vehicle & Industrial Equipment Design
Merchandise Mart Plaza
P.O. Box 3555, Chicago Illinois 60654

SECTION 24 - MISCELLANEOUS

24.01 - Fire Extinguisher

- A. The Builder shall furnish and install a 5-pound, dry chemical type extinguisher, Ansul No. K5 extinguisher with Purple "K" dry chemical and 20 inch hose assembly, as shown on Ansul Company Drawing No. 15797 with special nozzle.
- B. The fire extinguisher shall be located in concealed but easily accessible location. Mounting of the extinguisher shall be rigid and such as to prevent vibration and noise. Location and mounting of the extinguisher shall require the approval of the Engineer.
- C. On the outside of the fire extinguisher there shall be a metal label indicating that the fire extinguisher has been listed and approved by the Underwriter's Laboratories and Factory Mutual Laboratories.
- D. The fire extinguisher shall be die-stamped with the words "Stolen From CTA" with letters approximately 1/4 inch high. This wording shall be stamped around the barrel of the extinguisher approximately 1/4 inch up from the bottom edge of the extinguisher.

24.02 - Odometer

The odometer shall be located in the driver's instrument panel.

24.03 - Grounding Strap

A static discharge grounding strap shall be furnished and installed. Location is to be selected by the Engineer.

24.04 - Guards

- A. All piping, wiring, control rods and equipment located within the bus shall be adequately protected against damage or interference by, or hazard to, passengers or the operator.
- B. When a shield or guard is placed around a unit which requires inspection and/or lubrication, the shield shall be so secured as to provide for easy access to the unit.

24.05 - Materials

- A. All materials, specialties, equipment, component parts, and accessories shall be manufactured using U. S. customary units of measurement and shall comply with the standard or specification of the appropriate U.S. technical or professional society or trade association or U. S. Government. All tests shall be conducted using U. S. customary units of measure.

SECTION 24 - MISCELLANEOUS (Continued)

24.05 - Materials (Continued)

- B. The Contractor shall submit with his proposal a detailed description and specification of the frame structure, roof structure and side sheathing, with particular reference to the materials to be used.
- C. Upon the request of the Engineer, the Builder shall submit samples of materials for examination, test and approval.
- D. All samples requested in this specification to be sent to Chicago Transit Authority shall be delivered f.o.b. destination Chicago, location to be designated by the Engineer.
- E. Any one part or unit used in the construction of these buses shall be an exact duplicate in manufacture and design and construction of each of the buses in this Contract, unless a change is agreed upon by the Engineer.
- F. All reinforced fiberglass plastic components shall be color pigmented throughout, not just on the surface. The fiberglass plastic components shall not have resin rich or resin poor sections. Exceptions require the permission of the Engineer.
- G. Leather grain aluminum shall not be used in the interior of the bus.

24.06 - General Conditions

- A. All copper tubing shall be as specified on CTA chart on Page DR-1. All tubing fittings shall be Eastman-Imperial, Parker-Hannifin, Bendix-Westinghouse or Mueller Brass, but the same type of fitting must be used in the same location throughout the order of buses. Long tubing nuts shall be applied where space conditions permit.
- B. All piping, tubing, cables, and wiring shall be properly bracketed.
- C. All mounting of assemblies and sub-assemblies including the power plant and accessories shall be mechanically isolated to minimize the transmission of vibration to the body structure.
- D. Any pipe fittings subject to high stress shall be of heavy duty type.
- E. All exterior light fixtures shall be made of approved materials.
- F. Relays, valves, buzzers, chimes, and voltage regulator shall be adequately grounded, but not grounded through the body or box of the unit.
- G. All gauges and signal lights on dash, engine compartment, or under body shall be watertight.
- H. All rubber seals on ventilator doors and compartment cabinet doors shall be secured in approved shaped channels to firmly hold rubber seals in place.

SECTION 24 - MISCELLANEOUS (Continued)

24.06 - General Conditions (Continued)

- I. All burrs and sharp edges shall be dressed so as to prevent injury to passengers, operators and maintenance personnel.
- J. All castings shall be true and free from imperfections.
- K. All clevises shall be removable and not welded to the rods. Exceptions require the permission of the Engineer.
- L. Drain and filler plugs on rear axle, transmission drain and engine drain plugs shall be of the magnetic type, have hexagon heads, be 3/4-inch, 7/8-inch and 1/2-inch pipe thread respectively and be of high strength material.
- M. All trim chrome plating shall be equal to Federal Specification QQ-C-320-A, Class 1, Type 11, satin finish.
- N. Lumber shall be thoroughly air seasoned or kiln dried; shall be straight grained; and shall be free from rot, knots, checks, and other defects which may impair its strength or durability or mar its appearance. Lumber shall be dressed on all sides to full dimensions. Wood of any type shall not be used except where specified.
- O. All welding shall conform with American Welding Society standard quality procedures and where visible have a finished appearance.
- P. All flexible hoses used in the engine compartment for air, oil, and water shall be teflon hose with braided stainless steel jacket and standard SAE brass or steel fittings. Lengths of hoses shall be standardized in accordance with chart on page DR-18. Flexible hoses, other than specified on DR-18, shall require the permission of the Engineer.
- Q. All insulations, plastics, and synthetic material shall be fire-retardant self-extinguishing and non-toxic.
- R. All surfaces to which springs are attached shall be of such a pattern as to prevent excessive grooving or wear of the parts.
- S. All jack shafts or spindle brackets which require removal for maintenance shall be bolted-on rather than welded-to the bus-frame structure.
- T. The accelerator control systems shall meet the requirements of FMVSS 124.
- U. All grease and oil fittings shall be readily accessible for lubrication.
- V. All steel bolts, nuts, screws, and washers shall be cadmium plated, except where otherwise requested. The thickness and method of cadmium coating shall conform to ASTM Specification No. A-165, latest revision, for type TS coating. All cap screws, nuts and bolts shall be of SAE, Grade 5 material, unless the application requires a higher grade material. The

SECTION 24 - MISCELLANEOUS (Continued)

24.06 - General Conditions (Continued)

"Grade Specification" for bolts and cap screws used on accessories shall be waived, providing the bolts and cap screws meet with the accepted standard successfully used, on such accessories, in the transportation industry. Bolt projections through nuts shall not be excessive. Should there be a reason for excessive bolt projection, the bolts shall be double nutted. Bolts used with nylon insert lock nuts shall be sized to extend at least two full threads through the locking ring but shall not extend more than two threads beyond the length of the next longer bolt.

- W. All sheet metal screws shall comply with ASTM and ASA recommendations relative to quality and installation. Phillips head sheet metal screws shall be avoided where possible.
- X. Bosses on units of light construction, with threaded sections in which fittings or pipes are connected, shall have hexagon or square shoulders which can be held with a wrench so as to eliminate damage to the unit.
- Y. All non-painted aluminum shall be anodized.
- Z. Specific manufacturer's recommendations as to the adjustment and settings shall be provided to CTA before the delivery of the first bus. Items such as voltage regulator, governors, engine tune-up data, and any pertinent data shall be furnished to allow time to prepare service and inspection forms for initial bus inspection.
- AA. All air, oil, and water lines and openings into equipment units shall be sealed, plugged or adequately protected against entrance of contaminants until connected.
- AB. The engine oil, transmission oil and power steering filler positions shall be equipped with identification tags as shown on Drawing No. E1-507, Page DR-5. Location shall require the concurrence of the Engineer.
- AC. Mounting of major assemblies including engine, transmission, axles, power steering and suspension components shall be such that dismounting shall be easily carried out by conventional shop methods.

24.07 - Safety Glazing Material

- A. All questions regarding the quality of safety glazing material shall be settled by the test methods prescribed in the American Standards Association's latest revision of AS-Z-26.1A, "Safety Code for Safety Glass for Glazing Motor Vehicles Operating on Land Highways".
- B. The edges of all glazing material shall be finished to a minimum SAE #4 edging to prevent cutting into rubber channels.

SECTION 24 - MISCELLANEOUS (Continued)

24.08 - Information to be Furnished to Chicago Transit Authority Engineer After Award of Contract

Builder shall furnish the Engineer of Chicago Transit Authority a copy of bill of all material, descriptions, specifications, and drawings of units, such as front axle, rear axle and differential, engine, by make and style number, in sufficient detail as required by the Engineer. If the Builder or Manufacturer will not supply drawings because they are considered "classified" information, he shall notify the Engineer and in lieu of such drawings furnish such information as will completely satisfy the Engineer as to what the Builder or Manufacturer proposes to furnish. If this information is sufficiently covered in Manufacturer's parts books, manuals, brochures, bulletins, or other technical information, then a bill of material shall not be required.

24.09 - Information to be Furnished with Bid Proposal

All buses provided under this specification shall conform to the data herein set forth within normal engineering and manufacturing tolerances. Information below is to be supplied for both the diesel and gasoline coach.

A. Bus Model Number _____

B. Maximum Warranted Speeds

- | | | |
|--|-----|-------|
| 1. Propulsion Engine Full Load | RPM | _____ |
| No Load | RPM | _____ |
| 2. Generator | RPM | _____ |
| 3. Propulsion Engine Fan | RPM | _____ |
| 4. Power Steering Pump | RPM | _____ |
| 5. Transmission | RPM | _____ |
| 6. A/C Compressor | RPM | _____ |
| 7. A/C Generator | RPM | _____ |
| 8. Vehicle | MPH | _____ |
| 9. Builder shall also furnish gradeability, engine speed versus vehicle speed in direct drive, and time versus vehicle speed curves for the engine he proposes to furnish. | | |

SECTION 24 - MISCELLANEOUS (Continued)

24.09 - Information to be Furnished with Bid Proposal (Continued)

C. General Dimensions

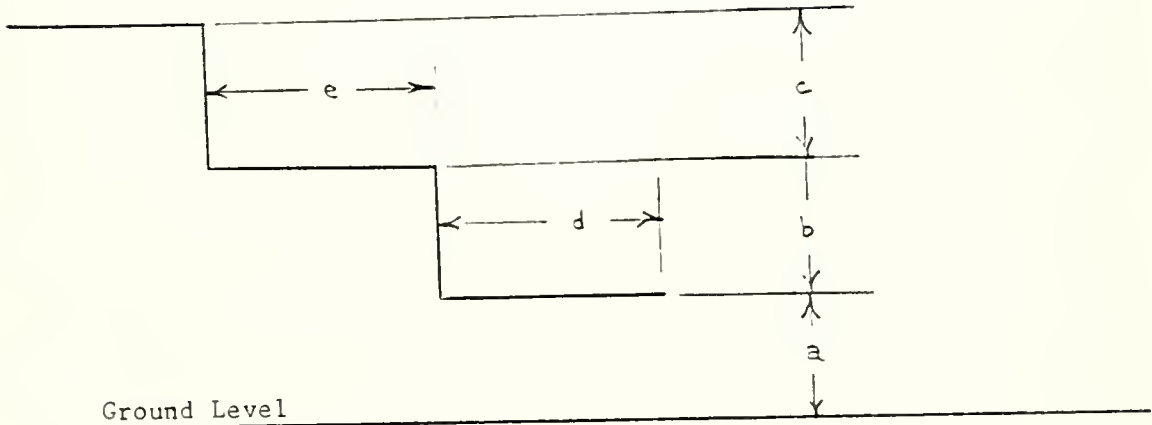
The Bidder shall show below, the dimensions of the vehicle upon which he is quoting:

- | | |
|--|-----------|
| 1. Overall Length | |
| Over Bumpers | In. _____ |
| Over Body | In. _____ |
| 2. Overall Width | |
| Over Body | In. _____ |
| 3. Overall Height, Front | |
| Empty | In. _____ |
| With 5,000 Lb. Load | In. _____ |
| 4. Overall Height, Rear | |
| Empty | In. _____ |
| With 5,000 Lb. Load | In. _____ |
| 5. Wheel Base | In. _____ |
| 6. Overhang, Center Line of Axle over Bumper | |
| Front | In. _____ |
| Rear | In. _____ |
| 7. Turning Radius | |
| Right | In. _____ |
| Left | In. _____ |
| 8. Body Clearance Radius | |
| Right | In. _____ |
| Left | In. _____ |
| 9. Height, Floor to Ceiling | |
| Above Front Axle | In. _____ |
| Above Rear Axle | In. _____ |
| 10. Width, Interior at 17" | |
| Above Floor | In. _____ |
| Center to Center | |
| Window Posts | In. _____ |
| 11. Width of Aisle at 17" | |
| Above Floor | In. _____ |
| At Seat Back Top Rail | In. _____ |
| 12. Cross Seat Spacing, Longitudinally | In. _____ |
| 13. Clear Opening Distance with Door | |
| Wide Open | In. _____ |

SECTION 24 - MISCELLANEOUS (Continued)

24.09 - Information to be Furnished with Bid Proposal (Continued)

14. Height of Door Opening over First Step
- In. _____
15. Minimum Road Clearances
- Front Axle
- Rear Axle
- In. _____
- In. _____
16. Road Clearances at Lowest Point Under Bus Body with 5,000 Lb. Load
- Front End
- Center
- Rear End
- In. _____
- In. _____
- In. _____
17. Gradeability Angles
- Approach Angle
- Departure Angle
- Ramp Breakover Angle
- Degs. _____
- Degs. _____
- Degs. _____
18. Step Heights from Gound, Step Rise Heights, and Step Depths



- Ground Level
- Front Steps, Empty
- In. (a) _____
- (b) _____
- (c) _____
- (d) _____
- (e) _____
- Front Steps, with 5,000 Lb. Load
- (a) _____
19. Tire Size - Tubeless
- Front _____
- Rear _____

SECTION 24 - MISCELLANEOUS (Continued)24.09 - Information to be Furnished with Bid Proposal (Continued)

20. Tire Pressure
Front PSI _____
Rear PSI _____

21. Tread
Front In. _____
Rear In. _____

D. Weights, Dry

1. Propulsion Engine Complete with
Accessories and Hydraulic Transmission,
Ready to Install Lbs. _____
2. Hydraulic Transmission Complete Lbs. _____
3. Front Axle Complete Less Wheels and Tires Lbs. _____
4. Rear Axle Complete Less Wheels and Tires Lbs. _____
5. Body Complete with All Body Equipment Lbs. _____

E. Weight of Bus, Complete with Full Complement
of Fuel, Oil and Water Minus Fare Box and
Driver

1. On Front Wheels Lbs. _____
2. On Rear Wheels Lbs. _____
3. Total Lbs. _____

F. Engine, Propulsion

1. Engine Model Number _____
2. No. of Cylinders _____
3. Bore In. _____
4. Stroke In. _____
5. Displacement Cu. In. _____
6. Compression Ratio _____
7. Injector or carburetor type _____
8. Brake Horsepower HP _____
At RPM _____
9. Torque Ft.-Lb. _____
AT RPM _____

SECTION 24 - MISCELLANEOUS (Continued)

24.09 - Information to be Furnished with Bid Proposal (Continued)

- 10. Main Bearings
 - Number _____
 - Diameter In. _____
 - Length In. _____

- 11. Wrist Pin Bearings
 - Diameter In. _____
 - Length In. _____
 - Type of Lubrication _____

- 12. Connecting Rod Bearings
 - Diameter In. _____
 - Length In. _____

- 13. Crankcase Oil Capacity
 - New Engine, Dry Qts. _____
 - New Engine, Wet Qts. _____

- 14. Oil Filter Capacity
 - Full Flow Qts. _____
 - Bypass Qts. _____

- 15. Idle Speed
 - A/C On RPM _____
 - A/C Off RPM _____

G. Transmission

- 1. Type _____
- 2. Gears _____
- 3. Ratio _____
- 4. Oil Capacity (including heat exchanger) Qts. _____

H. Axle, Front

- 1. Manufacturer _____
- 2. Model _____

I. Axle, Rear

- 1. Manufacturer _____
- 2. Model _____

SECTION 24 - MISCELLANEOUS (Continued)

24.09 - Information to be Furnished with Bid Proposal (Continued)

J. Drive Ratios

1. Intermediate _____
2. Rear Axle _____
3. Final _____

K. Steering, Power

Pump

1. Manufacturer & Model No. _____
2. Type _____
3. Relief Pressure _____

PSI _____

Booster

1. Manufacturer & Model No. _____
2. Type _____
3. Ratio _____

L. Brakes

1. Make of Fundamental Brake System _____
2. All data (necessary figures and measurements) for brake balancing design, including figures for determining K factor, shall be furnished.

3. Brake Drums or Discs

Front

Manufacturer _____
Part No. _____
Diameter _____

In. _____

Rear

Manufacturer _____
Part No. _____
Diameter _____

In. _____

4. Brake Block or Disc Manufacturer _____

5. Brake Block or Disc Identification

Front

Forward _____
Reverse _____

Rear

Forward _____
Reverse _____

6. Brake Blocks or Disc Per Wheel

Front _____
Rear _____

SECTION 24 - MISCELLANEOUS (Continued)

24.09 - Information to be Furnished with Bid Proposal (Continued)

7.	Brake Block or Disc Widths	
	Front	In. _____
	Rear	In. _____
8.	Brake Block or Disc Lengths	
	Front	In. _____
	Rear	In. _____
9.	Brake Block or Disc Thickness	In. _____
10.	Brake Area per Wheel	
	Front	Sq. In. _____
	Rear	Sq. In. _____
M.	<u>Air Reservoir Capacity</u>	Cu. In. _____
N.	<u>Total Coolant Capacity</u>	
	Cooling and Heating System	Gal. _____
O.	<u>Air-Conditioning Equipment</u>	
1.	Compressor	
	Manufacturer & Model	_____
	No. of Cylinders	_____
	Drive Ratio (to diesel engine)	_____
	Oil Capacity - Dry	Pts. _____
	Wet	Pts. _____
	Refrigerant	_____
2.	Condenser	
	Manufacturer & Model	_____
	No. of Rows	_____
	No. of Fins/in.	_____
	O.D. of Tube	In. _____
	Fin Thickness	In. _____
3.	Condenser Fan	
	Manufacturer & Model	_____
	Fan Dia.	In. _____
	Speed Max.	RPM _____
	Flow Rate (Max.)	CFM _____
4.	Receiver	
	Manufacturer & Model	_____
	Refrigerant Capacity	Lbs. _____

SECTION 24 - MISCELLANEOUS (Continued)

24.09 - Information to be Furnished with Bid Proposal (Continued)

5. Condenser Fan Drive - Electric

(a) Generator

Manufacturer & Model

(Max.) Rating

AMP

(b) Motor

Manufacturer & Model

6. Evaporator

Manufacturer & Model

No. of Rows

No. of Fins/in.

O.D. of Tubes

Fin Thickness

In.

In.

7. Expansion Valve

Manufacturer & Model

Superheat Setting

Deg.

8. Filter-Drier

Manufacturer & Model

P. For Information Only - Not to be Furnished

1. Tachometer

Manufacturer

Drive Assembly

Q. Lift Equipment

1. Manufacturer & Model

2. Type

3. Capacity

Lbs.

3. Dimensions

(a) Width of Platform

In.

(b) Length of Platform

In.

(c) Ramp Length

In.

(d) Ramp Angle

Deg.

(e) Total Length

In.

4. Cycle Time

(a) Step to lift at ground

Sec.

(b) Lift from ground to floor level

Sec.

(c) Lift at floor level to step

Sec.

(d) Total cycle

Sec.

5. Reservoir Capacity

Qts.

6. Type Fluid Used

7. Pump Capacity

GPM

8. Number of Hydraulic Cylinders

SECTION 25 - RESERVED FOR USE IN FUTURE SPECIFICATIONS.

SECTION 26 - HEATING, VENTILATING, AIR-CONDITIONING AND DEFROSTING

26.01 - General

The coach heating and air-conditioning systems shall be designed to provide passenger comfort by heating or cooling, dehumidifying and filtering the air which is force circulated within the coach. The system shall be designed to maintain coach interior temperature of 70 ± 2 degrees F. at all positions in the bus, during all climatic conditions prevailing in Chicago Metropolitan area.

26.02 - Air Distribution

- A. Both heated and air-conditioned air shall be evenly distributed in the coach interior. The driver's area shall have an air conditioned air outlet to ensure driver's comfort. Approximately 20% outside air shall be mixed in with the heated and air-conditioned air.
- B. Blowers shall be of sufficient size to evenly distribute air without creating drafts or blowing excessively on any passenger.
- C. Heated air shall be distributed to stepwell-lift area to prevent accumulation of ice and snow and to ensure proper lift operation.

26.03 - System Control

- A. The system shall be designed to keep the interior at a temperature of 70 ± 2 degrees, once the mode of operation has been chosen.
- B. A control switch shall be provided at the driver's position to choose either heating, ventilating or air-conditioning operation.
- C. The driver's heater-defroster shall operate independent of the passenger's heating system. The driver's control switch shall provide for a high, low and off position of the blower. A valve shall be provided at a convenient location to the driver to regulate water flow to control heat.
- D. The passengers' heater and the air-conditioning system shall be thermostatically controlled, adjustable by maintenance personnel ONLY.
- E. The evaporator motors shall be wired so as to provide air circulation in the A/C or vent modes and shall not cycle off with the A/C compressor in the A/C mode.

26.04 - Air Conditioning System

- A. The air-conditioning system shall be of a minimal three ton capacity, adequate to cool the vehicle to 70 degrees F. at the Chicago outside design condition of 90 degrees F. and sized to control the interior humidity to a comfortable level.

SECTION 26 - HEATING, VENTILATING, AIR-CONDITIONING AND DEFROSTING (Continued)

- B. The A/C compressor shall be driven from the vehicles engine with a suitable clutch and drive belt. Drive guards shall be provided if the A/C drive constitutes a safety hazard.
- C. The system shall contain a protective pressure switch and shall be adjusted to provide protection of either high or low pressures.
- D. There shall be a receiver tank with sight glass and a dehydrator filter drier incorporated within the system.
- E. All service valves shall be located for easy maintenance.
- F. All lines shall be bracketed and loomed wherever chafing may occur.
- G. The condenser core shall be adequate to prevent high head pressures during the A/C operation and shall not be mounted where it will be subjected to excessive amounts of dirt.

Condenser core and motor shall be mounted so to permit easy removal. The condenser motor shall be secured with rubber resilient material to dampen vibration and noise generated from motor vibration.

- H. The evaporators shall be of a roof or high area design to provide high supply and high return. The condensate drain shall expel the condensate below the floor level and shall not drain on any bus components.

26.05 - Heating System

The heating system shall have at least two (2) unit type heaters with one (1) located in the driver's area and one (1) located in the passenger's area.

Total output of heating system shall be at least 90,000 BTU.

An auxiliary pump shall be installed to circulate heated water. Pump shall be energized only when the driver's heat or passenger's heat is on.

26.06 - Front Heater and Defroster

- A. A front heater and defroster shall be located in the dash area to provide heat for the operator to provide air to defrost the windshield. Fan or fans shall draw air from the body interior and/or outside through a control device and pass it through the heater core, and by means of suitable ducts deliver it over the windshield to act as a defroster and over the operator's pedals. Defroster duct outlet at windshield shall have an easily removable screen to prevent entrance of coins or miscellaneous objects. A damper with its operating handle conveniently located for operation by the operator shall be installed in the duct to divert the air to both of the above-mentioned locations.

SECTION 26 - HEATING, VENTILATING, AIR-CONDITIONING AND DEFROSTING (Continued)

26.06 Front Heater and Defroster (Continued)

- B. A manual water shut-off valve, mounted fully accessible above the floor, with control handle conveniently located for operator's use, shall be installed to allow operator to defog windshield in the warm weather without blowing heated air on the windshield. The shut-off valve shall be controlled by a solid rod. Mounting and location of shut-off valve and control handle shall require the approval of the Engineer.
- C. The front heater shall be easily accessible for repair and maintenance.

26.07 - Filters

The air-conditioning evaporator, front heater, defroster and passenger's heater shall have easily replaceable air inlet filters to protect the cores. Filtering media shall be fire-retardant, disposable type, and provide good filtering efficiency.

26.08 - Test Data

The Builder shall provide test data substantiating the heating and air-conditioning system ability to adequately comply with performance requirements under varying ambient and operating conditions.

The design of the heating and air-conditioning system shall require the review and concurrence of the Engineer.

CHICAGO TRANSIT AUTHORITY

SUPPLEMENTARY
CHARTS AND DRAWINGS

PAGES DR-1 TO DR-10

F O R

SMALL MOTOR BUSES
FOR
THE MOBILITY LIMITED

O F

SPECIFICATION NUMBER 4200-76

AUGUST 1977

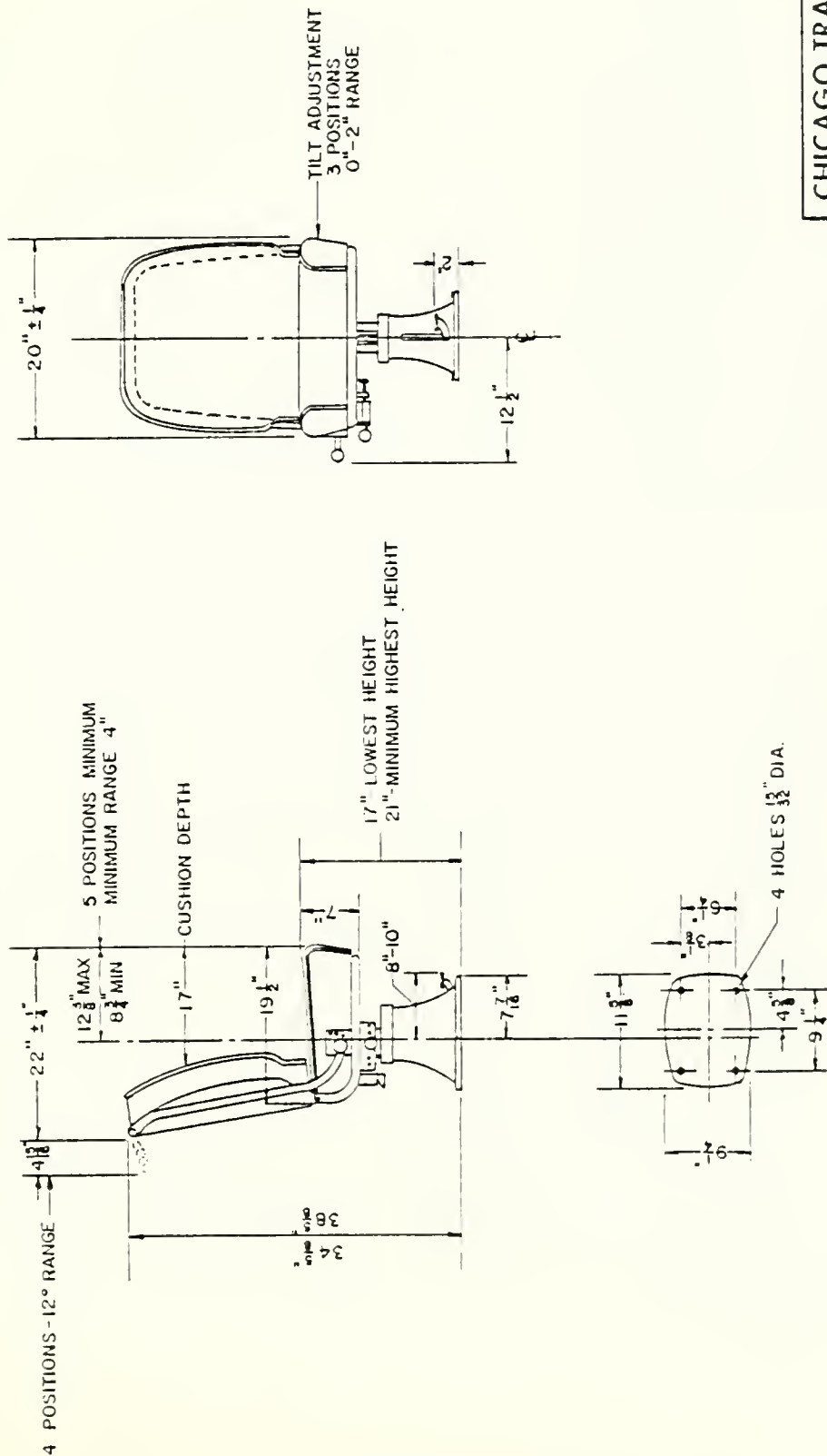
CHARTS AND DRAWINGS

<u>Page No.</u>	<u>Drawing Number</u>	<u>Date of Original Drawing or Latest Revision</u>	<u>T i t l e</u>
DR- 1		3-11-66	Bus Copper Tubing
DR- 2	E2-500	12-20-71	2-Passenger Transverse Seat
DR- 3	E2-503	7-15-75	Bus Operator's Seat
DR- 4	E1-506	9-03-74	Special Events Sign Bracket
DR- 5	E1-507	7-11-74	Service Door Identification Tags for Buses
DR- 6	E1-513	10-29-75	Run Number Sign Curtain
DR- 7	E1-511	7-28-75	Transfer Box and Bracket
DR- 8	E1-512	7-30-75	Transfer Refuse Bag and Bracket
DR- 9		7-20-71	Stainless Steel, Wire Braided Covered, Teflon Hose
DR-10		10-29-75	Helvetica Font

BUS COPPER TUBING

All copper tubing for buses shall be soft-type and shall adhere to the following Specifications:

<u>O. D. Inches</u>	<u>Wall Thickness Inches</u>
1/8	0.032
3/16	0.035
1/4	0.035
5/16	0.049
3/8	0.049
1/2	0.049
5/8	0.049
3/4	0.049
1	0.049
1-1/8	0.049
1-1/4	0.049
1-3/8	0.083



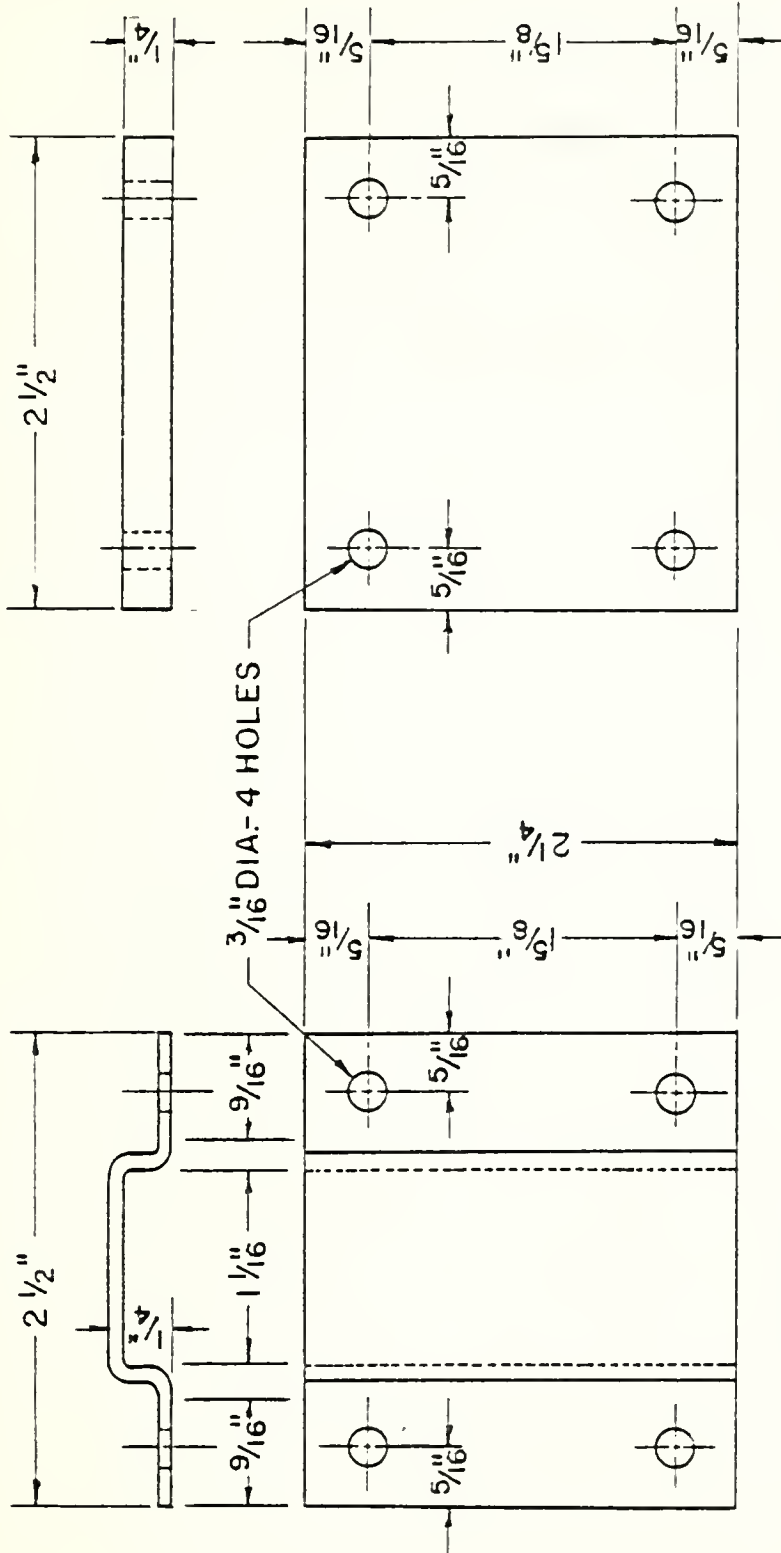
DR-3

CHICAGO TRANSIT AUTHORITY
VEHICLE AND INDUSTRIAL EQUIPMENT DESIGN
ENGINEERING DEPARTMENT

BUS OPERATOR'S SEAT

DRAWN D.A.B.	VEHICLE SERIES OR LITER
CHECKED J. J. J.	SCALE
APPROVED J. J. J.	DATE 7-15-75
APPROVED J. J. J.	DWG NO. E2-503
REV	

FORMERLY E-1-500



BRACKET

BACKING PLATE

MATERIAL: BRACKET-16 GA.18-8
STAINLESS STEEL.
BACKING PLATE-ALUMINUM.

CHICAGO TRANSIT AUTHORITY
VEHICLE AND INDUSTRIAL EQUIPMENT DESIGN
ENGINEERING DEPARTMENT

SPECIAL EVENTS SIGN BRACKET

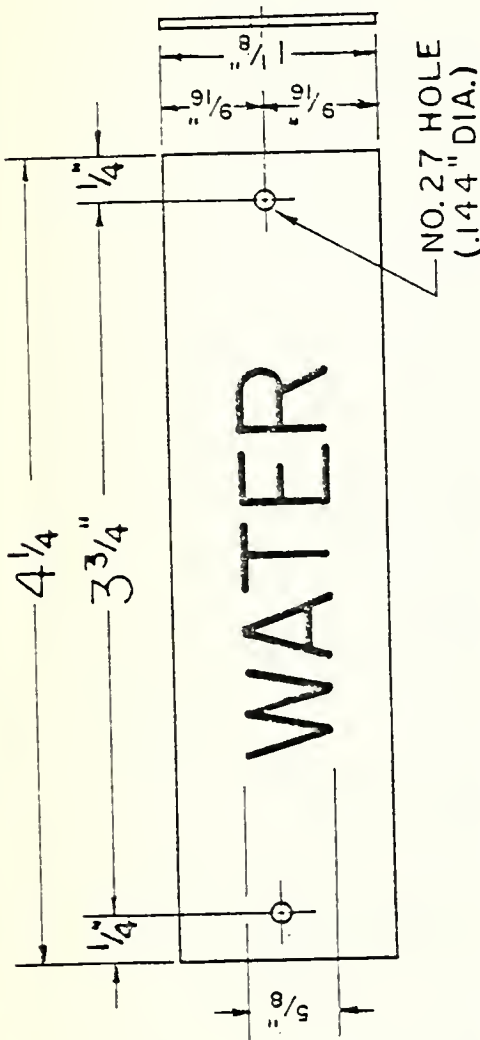
DRAWN DAN BADON
CHECKED *[Signature]*
APPROVED *[Signature]*
APPROVED *[Signature]*

VEHICLE SERIES OR DETAIL

SCALE FULL DATE 9-3-74

DWG NO E1-506

FORMERLY SD-1013



WATER

1

CONV. OIL

2

ENG. OIL

3

DIESEL

4

STEER OIL

5

LETTERS TO BE STAMPED ON .032 GA.
18-8 STAINLESS STEEL OR ETCHED
ON .081 GA. ANODIZED ALUMINUM.
LETTERS TO BE BLACK ON
POLISHED BACKGROUND.

CHICAGO TRANSIT AUTHORITY
VEHICLE AND INDUSTRIAL EQUIPMENT DESIGN
ENGINEERING DEPARTMENT

**SERVICE DOOR IDENTIFICATION
TAGS FOR BUSES**

DRAWN CHECKED APPROVED	D.A.B. <i>[Signature]</i>	VEHICLE SERIES OR DETAIL
REV.	SCALE NOT TO SC. DATE 7-11-74	DWG. NO. E1-507

ABFKLNPXO

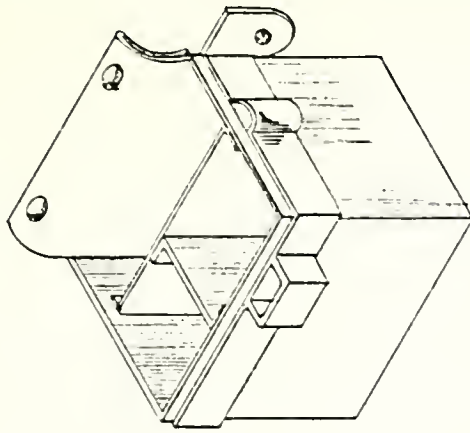
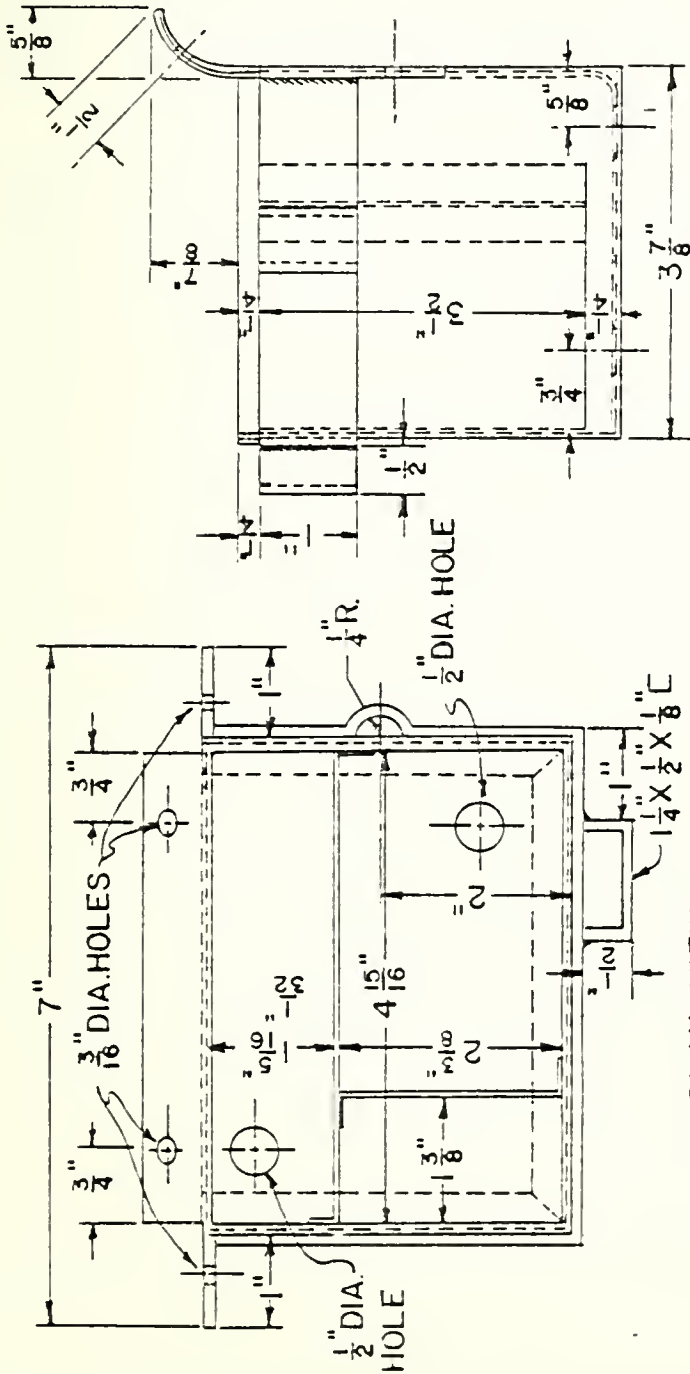
1 2 3 4 5 6 7 8 9 0 X

NOTE:
STYLE-MATCH AS
SHOWN ABOVE.
SIZE OF NUMERALS
AND LETTERS SHALL
CONFORM TO CURTAIN
OPENING.

CHICAGO TRANSIT AUTHORITY
VEHICLE AND INDUSTRIAL EQUIPMENT DESIGN
ENGINEERING DEPARTMENT

RUN NUMBER SIGN
CURTAIN

REV.	D. A. BADON	VEHICLE SERIES OR DETAIL
DRAWN	<i>DA</i>	SCALE NONE
CHECKED	<i>DA</i>	DATE 10-29-75
APPROVED	<i>DA</i>	DWG. NO. E1-513
APPROVED	<i>DA</i>	

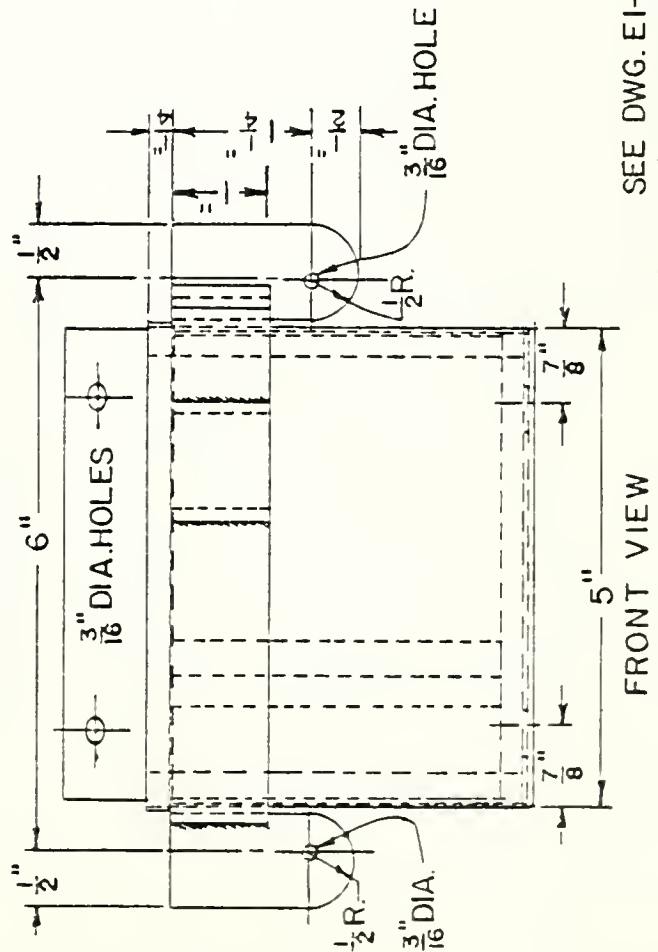


MATERIAL: N^o 20 GA. SHT. METAL
CONSTRUCTION: SPOT WELDED

CHICAGO TRANSIT AUTHORITY
VEHICLE AND INDUSTRIAL EQUIPMENT DESIGN
ENGINEERING DEPARTMENT

TRANSFER BOX & BRACKET

DRAWN D.A. BADON CHECKED APPROVED	VEHICLE SERIES OR DETAIL
SCALE 6"=1'-0" DATE 7-28-75	DWG NO. E1-511
REV. A	

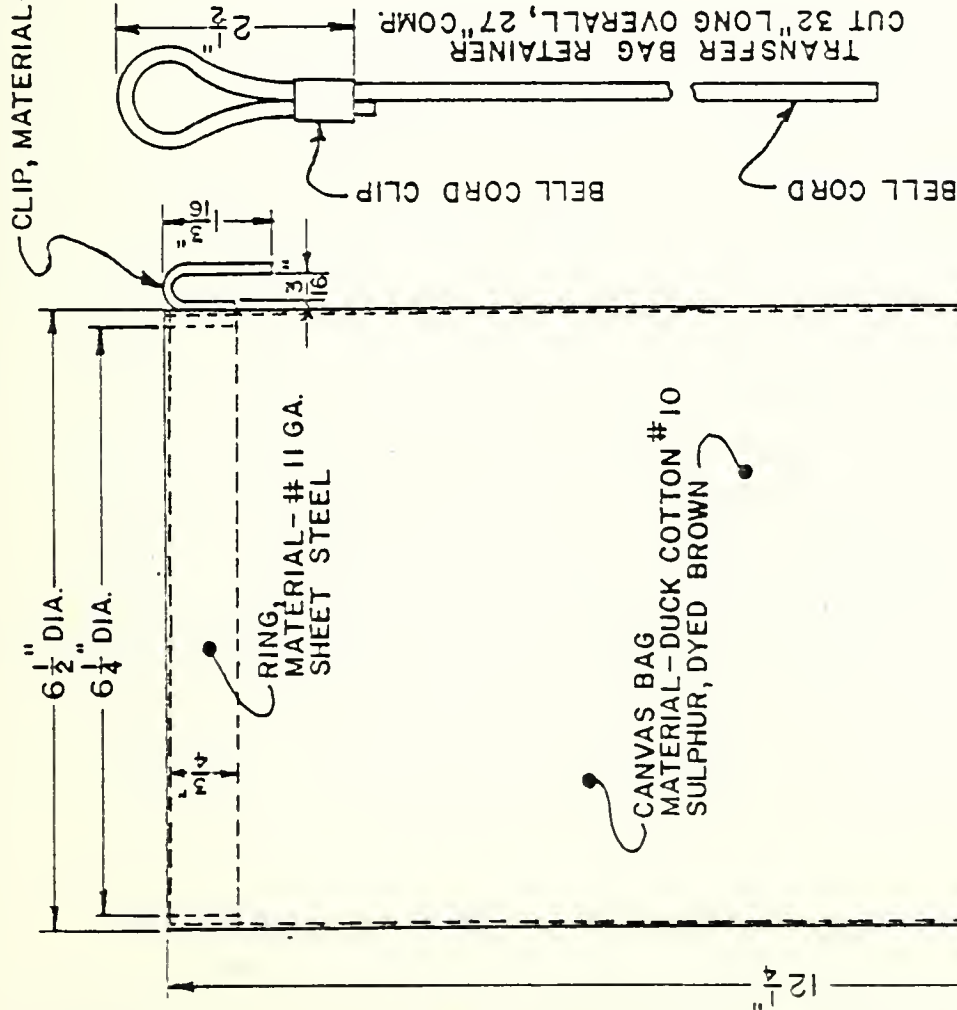


SEE DWG. E1-512
FOR BRACKET DETAIL

NOTE

CLIP, MATERIAL-#11 GA. SHEET
STEEL $\frac{3}{4}$ " WIDE

W-INDICATES 1" WELD
TO TRANSFER
BOX.



CHICAGO TRANSIT AUTHORITY
VEHICLE AND INDUSTRIAL EQUIPMENT DESIGN
ENGINEERING DEPARTMENT

TRANSFER REFUSE BAG &
BRACKET

DRAWN	D.A. BADON	VEHICLE SERIES OR DETAIL
CHECKED		
APPROVED		SCALE HALF DATE 7-30-75
REV.		DWG. NO. E1-512

STAINLESS STEEL, WIRE BRAID COVERED, TEFLON HOSE

The following is a list of Stainless Steel, Wire Braid Covered, Teflon Hose. This list shall be adhered to whenever stainless steel, wire braid covered, teflon hose is called for in the Specification.

<u>Inside Diameter</u>	<u>No. 1 End</u>	<u>Fitting Size</u>	<u>No. 2 End</u>	<u>Fitting Size</u>	<u>Overall Length</u>
3/16"	Male Pipe	1/8"	SAE Female Swivel	1/4"	17"
"	" "	1/8"	" " "	1/4"	21"
"	SAE Female Swivel	1/4"	" " "	1/4"	11-1/2"
"	" " "	1/4"	" " "	1/4"	26"
"	" " "	1/4"	" " "	1/4"	34"
"	" " "	1/4"	" " "	1/4"	37"
"	" " "	1/4"	" " "	1/4"	61"
1/4"	SAE Female Swivel	5/16"	SAE Female Swivel	5/16"	25"
"	" " "	5/16"	" " "	5/16"	43"
5/16"	Male Pipe	1/4"	SAE Female Swivel	3/8"	16"
"	SAE Female Swivel	3/8"	" " "	3/8"	20"
"	" " "	3/8"	" " "	3/8"	26"
"	Male Pipe	1/4"	" " "	3/8"	27"
"	SAE Female Swivel	3/8"	" " "	3/8"	38"
13/32"	SAE Female Swivel	1/2"	SAE Female Swivel	1/2"	14"
"	Male Pipe	3/8"	" " "	1/2"	21"
"	SAE Female Swivel	1/2"	" " "	1/2"	24"
"	" " "	1/2"	" " "	1/2"	26"
"	" " "	1/2"	" " "	1/2"	29"
"	" " "	1/2"	" " "	1/2"	41"
1/2"	Male Pipe	1/2"	SAE Female Swivel	5/8"	11-1/2"
"	SAE Female Swivel	5/8"	" " "	5/8"	18"
"	Male Pipe	1/2"	" " "	5/8"	22-1/2"
5/8"	SAE Female Swivel	3/4"	SAE Female Swivel	3/4"	18"
"	JIC Female Swivel	3/4"	JIC Female Swivel	3/4"	32"
"	" " "	3/4"	" " "	3/4"	46"
"	" " "	3/4"	" " "	3/4"	68"
7/8"	JIC Female Swivel	1"	JIC Female Swivel	1"	23"

ABCDEFGHIJKL
MNOPQRSTUVWXYZ&
abcdefghijkl
mnopqrstuvwxyz
1234567890

ABCDEFGHIJKL
MNOPQRSTUV
WXYZ&
abcdefghijkl
mnopqrstuvwxyz
1234567890

PROPOSAL

The undersigned offers, in accordance with the terms and conditions of the Contract Documents, of which this Proposal is a part, to furnish to the Chicago Transit Authority, the following described work and/or services and/or equipment and/or supplies, at the following rates and/or prices:

SCHEDULE OF PRICES OR CHARGES

<u>Description of Work and/or Supplies</u>		<u>Price and/or Charges</u>	
		<u>Price Each Delivered Chicago</u>	<u>Total Delivered Price</u>
20 Buses, air conditioned lift equipped, for the the mobility limited		\$ _____	\$ _____

FRONT DESTINATION SIGN

	<u>Price Per Reading*</u>	
	<u>Add</u>	<u>Deduct</u>
White lettering on translucent color or black background	\$ _____	\$ _____
Color Interruptions	\$ _____	\$ _____

* Prices will not be considered for bid evaluation purposes.

PROPOSAL - Cont'd.

The undersigned hereby acknowledges having received a full set of
CONTRACT DOCUMENTS and Addenda Nos. (None, unless indicated here) _____

STATE OF ILLINOIS)
) SS.
COUNTY OF COOK)

The undersigned being duly sworn deposes and says on oath that said undersigned has not entered into any agreement with any other Bidder or Prospective Bidder or with any other person, firm or corporation relating to the price named in said Proposal or any other proposal, nor any agreement or arrangement under which any person, firm or corporation is to refrain from bidding, nor any agreement or arrangement for any act or omission in restraint of free competition among Bidders, and has not disclosed to any person, firm or corporation the terms of said bid or the price named herein.

Notice to the undersigned may be served by mailing to the address hereinafter set forth.

Respectfully submitted this _____ day of _____ 19____.

(IF A SOLE PROPRIETOR)

Signature of Bidder _____

Name of Bidder _____

Business Address _____

Subscribed and sworn to
before me this _____
day of _____, 19____

(SEAL OF NOTARY)

Commission expires _____

PROPOSAL - Cont'd.

(IF A PARTNERSHIP OR
JOINT VENTURER)

Firm Name _____

By (Signature) _____
(Partner)

Business Address _____

All Partners or Joint Venturers of the
Firm shall execute this bid unless one
Partner or Joint Venturer is authorized
to sign for the Partnership or Joint
Venturer.

Suscribed and sworn to
before me this _____,
day of _____, 19____

(SEAL OF NOTARY)

Notary Public

Commission expires _____

(IF A CORPORATION)

CORPORATE
SEAL

Corporate Name _____

By (Signature) _____

Title _____

Business Address _____

Attest: _____
Secretary

If signed by any person other than the
President or Vice-President, a certified
copy of resolution or by-law authorizing
such person to sign must accompany this
Proposal.

Subscribed and sworn to
before me this _____,
day of _____, 19____

(SEAL OF NOTARY)

Notary Public

Commission expires: _____

PROPOSAL - Cont'd.

ACCEPTANCE

The undersigned, on behalf of Chicago Transit Authority, a Municipal Corporation of the State of Illinois, hereby accepts the foregoing bid items as identified in the Proposal.

Dated this _____ day of _____, 19_____, at Chicago, Illinois.

Chairman, Chicago Transit Board

General Finance Manager

Manager, Materials Management

AUTHORIZED BY ORDINANCE NO. _____
_____ OF CHICAGO TRANSIT BOARD.

Assistant Secretary

APPROVED AS TO FORM AND LEGALITY:

Counsel

8/4/2008

WT 140786 1 75 00



HF GROUP - IN

